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PENNSYLVANIA

POLITICAL, GOVERNMENTAL,
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Independence Hall

PENNSYLVANIA

POLITICAL, GOVERNMENTAL,
MILITARY AND CIVIL

By

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Author

PHYSICAL, ECONOMIC AND
SOCIAL VOLUME

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ANALYSIS

RESULTS

CHAPTER I.

PHYSICAL FEATURES.

Geology—The geological division of the Commonwealth coincides with the popular geographical division thereof into Eastern and Western Pennsylvania; the ridge of the Allegheny Mountains being the divisional line. Western Pennsylvania belongs to the geological province of the Mississippi Valley, and is one vast field of bituminous coal, overlaid and underlaid by carboniferous sandstone and conglomerate. The uppermost and most valuable of the bituminous coal measures is the Pittsburgh; and from the outlying remnants of the same found on the Broad Top Mountain and in Maryland, and also from the identification of the Pittsburgh with one or two of the deposits of anthracite in northeastern Pennsylvania, it has been conjectured that this coal had its origin in a growth of swamp vegetation almost co-extensive with the State. The original northern limit of the Pittsburgh bed in the direction of Lake Erie is now undeterminable, for the whole Allegheny Valley and the upper Susquehanna Valley has been denuded of the same by those slow but potent levelers, frost and rain, though the middle and lower coal measures in these regions have been preserved. Going northward, the middle and lower beds consecutively disappear, until only patches of the lowest workable deposits maintain a precarious existence on the highest land; and in the extreme north the old red sandstone of the Catskill (Devonian) formation, which underlies the carboniferous sandstone, is exposed in broad bands along all the water-courses. Eastern Pennsylvania belongs to the geological province of the Atlantic seaboard and is partly a region of mountains of Devonian and Silurian age and partly an open country of the still older Cambrian and Archaean periods. A broad continuous belt of Jurassic-Triassic brownstone and trap crosses the latter from west to east, and Cretaceous rocks underlie a narrow strip along the Delaware, below Trenton. A sheet of glacial drift covers the northern part of the State down to a line drawn from Belvidere, New Jersey, to Olean, New York, and curving from the latter place through Warren, Venango, and Beaver counties to a point on the western State line, a few miles north of the point of exit

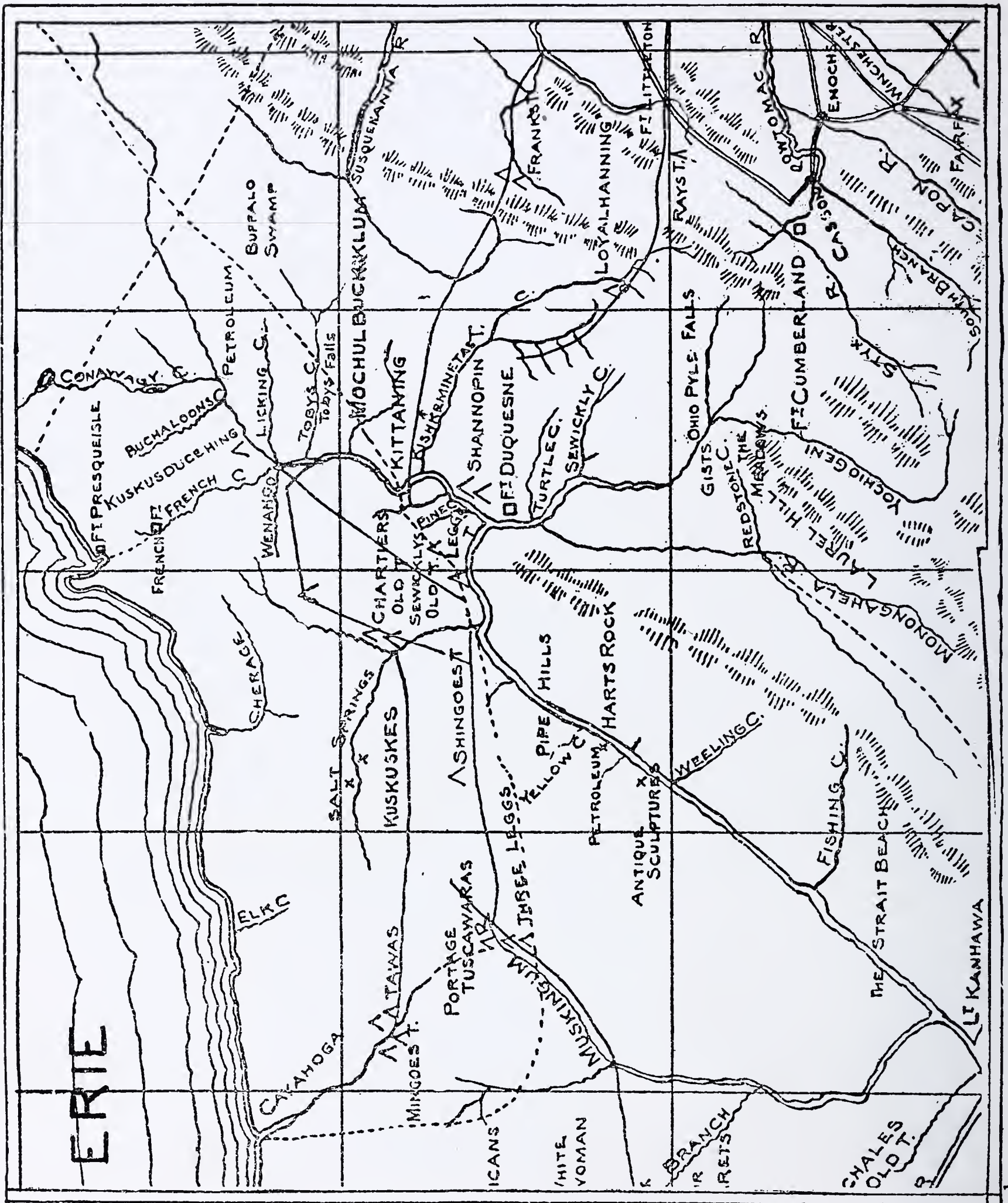


**Glacial Pot Hole, Archbald,
Lackawanna County**

of the Ohio River. On the Pocono plateau, in the northeastern section of the Commonwealth, the old red Catskill sandstone occupies nearly the entire surface. Within a deep trough in the otherwise horizontal outspread of the Catskill formation lie the anthracite deposits of Luzerne County, the best preserved in Pennsylvania; for so deep is this trough that not only the lower and middle measures and the measure identified with the Pittsburgh have been saved, but there are still higher coal beds, and above these remnants of still higher rocks, containing Permian fossils found elsewhere in the State only in the extreme southwestern corner. The coal beds of the lower anthracite region lie in a series of parallel folds and rise steeply to the soil at their edges; the inclination of one bed being opposite to that of the bed in the next pocket. An arch described in the direction of an ascending seam and down again in the direction of descent of the next following would rise thousands of feet in air; and this aerial arch would represent the amount of erosion which the strata underlying the coal and the coal measures themselves have undergone. It is estimated that only one ton in a hundred of the original deposits of anthracite has been preserved. Another illustration of the stupendous changes wrought in the topography of Pennsylvania by the frosts and rains of ages is found in the region of the Alleghanies. Wherever the Carboniferous formations (which once covered the entire surface of the State) have been preserved in geological basins, there are the mountain ridges of today; where these formations were arched they have been eroded away and their places taken by the valleys of the present time. The Catskill sandstone crops out beneath the Carboniferous escarpment of the Alleghanies on the western side of the Nittany Valley, for instance, in a bold bluff. The same formation is recognizable with an opposite dip on the Broad Top, twenty miles to the east. The lower Devonian and Silurian rocks crop out in their regular order on the flanks of both mountains, and in the valley between; and an arch connecting the old red sandstone bluff with the same formation on the Broad Top would reach an altitude of 21,760 feet at its keystone line, if the measured thickness of the sandstone itself and of the underlying strata be added together. If to these one should add the thickness of the overlaying Carboniferous strata, up to and including the Pittsburgh coal bed (which has been preserved on the Broad Top), the total height of these primordial mountains, which have been dissolved in the weathering process of millions of years, would appear to have been over five miles.

Topography—The land surface area of Pennsylvania is 44,832 square miles. In general outline it is a rectangle having one irregular side formed by the Delaware River, and a triangular projection at its northwestern corner extending northward to the shore of Lake Erie. The segment of a circle with a radius of twelve miles drawn from the courthouse at New Castle, Delaware, cuts a small piece from its southeastern corner.

Pennsylvania is 158 miles wide between two parallels $39^{\circ} 43'$ and $42^{\circ} 15'$ north latitude, which constitute its northern and southern boundaries, and 302 miles long, measured from the Ohio State line to either of two points on the Delaware River,



Map of 1756

Lebanon, or Cumberland Valley. It is from ten to twenty miles wide in Pennsylvania and is limited on the southeast by the South Mountain range. Through the break in this range between Harrisburg and Reading the Great Valley merges into the open country of the southeast.

All the ridges of the Appalachian system undergo a considerable lowering before entering Pennsylvania. The Catskills of New York with summits exceeding 4,000 feet become in Pennsylvania the Pocono Plateau with no elevations greater than 2,000 feet; the Blue Ridge of Kentucky with peaks reaching an altitude of 7,000 feet enters Pennsylvania as the South Mountain range, which scarcely anywhere attains a height of 2,000 feet and disappears entirely a little to the west of Harrisburg. It rises again in a ridge of not over 1,000 feet high at Reading, and, passing into New Jersey, becomes the highlands of the Hudson with summits of 3,000 feet. Only a few knobs of the Alleghenies rise to an altitude of 2,800 feet and the North Mountain range, with its narrow, rocky crest, is of the almost perfectly uniform height of 2,000 feet.

While destitute of high mountains the surface of Pennsylvania is everywhere more or less hilly. The southeastern quarter of the State, though but little above sea level, is a rolling country, and the western section is deeply furrowed by water courses and broken by short ridges. Western Pennsylvania contains two distinct ranges, Laurel Hill and Chestnut Ridge, running parallel from southwest to northeast about ten miles apart and enclosing the Ligonier Valley.

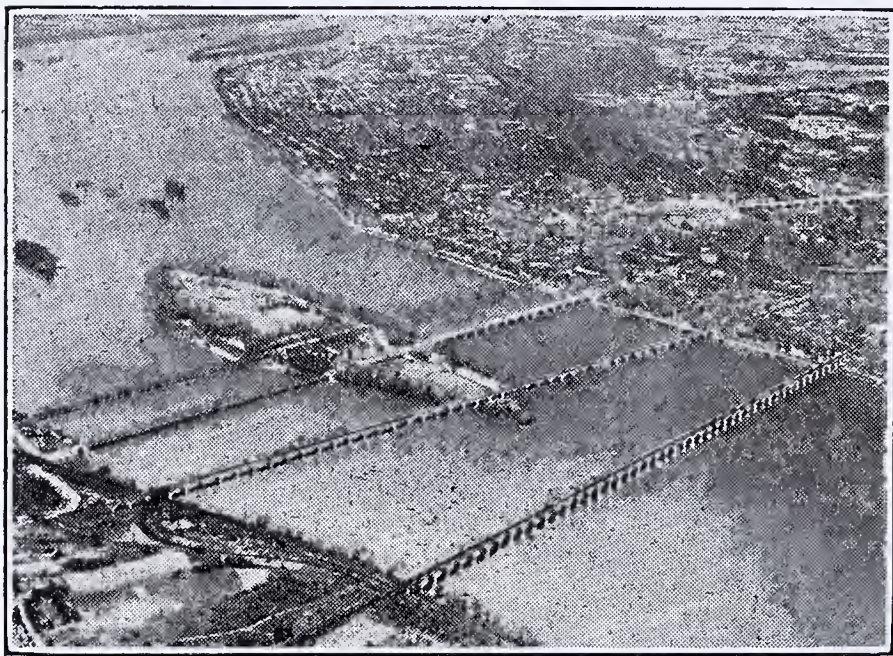
The physical characteristics divide Pennsylvania into three sections. The eastern includes eighteen counties, comprising those around Philadelphia, which surround the group of smaller cities of Coatesville, Lancaster, York, Harrisburg, Reading, Allentown, Bethlehem and Easton, as well as the counties in which anthracite coal mining is carried on, which includes the cities of Scranton, Wilkes-Barre, Carbondale, Hazleton, Pottsville, Shamokin, and Sunbury.

The western section of twenty counties includes all those counties along the western boundary and others west of the Allegheny Mountains, including Pittsburgh, the Commonwealth's second largest city, and the smaller cities of Washington, Uniontown, New Castle, Butler, Erie, Franklin, Oil City, Bradford, Clearfield, Johnstown, and Altoona. This western section comprises the larger portions of the bituminous coal, oil, and natural gas deposits.

The northern and central section contains the remaining twenty-nine counties lying between the eastern and western sections. It includes all the central counties from the Maryland to the New York boundary lines, as well as all the counties lying along the north and northeastern boundaries. This section is generally mountainous, and includes the Allegheny National Forest, and most of the Commonwealth's forest reservations, also extensive areas which are famous as hunting and fishing regions. It has comparatively few populous centers, the most important of which are Williamsport, Lock Haven, Bradford, Towanda, Altoona, Carlisle, and Chambersburg.

The surface of the State is exceedingly rich and diversified, and there are many fertile valleys admirably adapted to agricultural pursuits. Pennsylvania contains many extensive mineral deposits, especially coal, iron and petroleum.

Rivers—The tableland of central and northern Pennsylvania forms the water parting. A small quantity of the rainfall is drained southward through the Potomac, and a still smaller part is carried away northward by the Genesee River into Lake Ontario. The three great drainage systems are those of the Ohio, the Susquehanna, and the Delaware. Beginning with the Water Gap in the Pocono Plateau the otherwise unbroken wall of the North Mountain is pierced by five gateways through which flow, in the order named, the Delaware, the Lehigh, the Schuylkill, the Swatara, and the Susquehanna.



Harrisburg Panorama

The Delaware drains only three northwestern counties of the State, the Lehigh enters the former river at Easton, after draining parts of Carbon and Monroe counties, and passing in its course the conical mountain at Mauch Chunk, one of the most familiar landmarks of the country. The Schuylkill drains the remainder of lower anthracite regions and joins the Delaware, at Philadelphia. The Brandywine, the lowest of the Delaware's tributaries, may be here

mentioned for its historic interest. It flows through the Chester Valley in Pennsylvania and empties into the Delaware Bay. The Swatara is an inconsiderable stream, but its water gap is like the others mentioned.

The Susquehanna divides at Northumberland into two main branches, which spread their watery tentacles over the whole country from the Mohawk Valley in New York to Cambria County in western Pennsylvania. Ascending the North Branch fifty miles, one enters the historic Wyoming Valley through another grand mountain gate. Central Pennsylvania is drained mainly by the Juniata, the largest tributary of the Susquehanna, and the West Branch of the Susquehanna, the most picturesque stream in the Commonwealth.

The drainage system of western Pennsylvania is constituted of the Allegheny and the Monongahela and their affluents. The former flows mainly southwest and southeast, and at Pittsburgh is joined by the latter, which rises in Virginia and has a northward course of eighty miles within the State, the united streams forming the Ohio.

The Conemaugh, which collects the waters of the highlands west of the Allegheny at Johnstown, and the Youghiogheny, which, like the Monongahela, rises in Virginia, cut through the Laurel Hill range, and, after crossing the Ligonier Valley, break in similar fashion through Chestnut Ridge; the four gorges each rising



Delaware River Bridge, Philadelphia

almost vertically 1,200 to 1,300 feet from the river beds to the mountain tops. The Conemaugh and Loyahanna unite at Saltsburg, forming the Kiskiminetas, which joins the Allegheny at Freeport; the Youghiogheny joins the Monongahela at McKeesport.

Pennsylvania Mountains—The mountains of Pennsylvania run consistently northeast and southwest with one exception, Sideling Hill, which bisects the other ranges in a northwest and southeast direction. The two principal ranges are the Kittochtinny or Blue Mountains on the east, and the Alleghenies on the west. East of the Blue Mountains is a broad farming valley known at various parts of its length and breadth as the Kittochtinny, Cumberland, Lebanon, and Lehigh Valley. Between the Blue Mountains and the Alleghenies, and as far west as the Alleghenies drop away to the Ohio River, are high or mountain valleys, and the deeper valleys of the Susquehanna, Juniata, Monongahela, Youghiogheny and Allegheny rivers. These valleys constitute what is known as the Vallemont Region of Pennsylvania.

The rivers of Pennsylvania, instead of circling around the mountains, typify the dogged courage of the people of the State by breaking right through the granite ridges. The Juniata River, for example, winds its way through no less than thirteen ranges of hills between its source and the juncture with the Susquehanna River at Haldeman's Island, above Clark's Ferry.

The mountains of Pennsylvania were once covered with superb stands of timber—hemlock on the lower slopes near the streams, white pine on the higher levels, and hardwoods on the summits—the finest trees that the sun ever shone upon.

Colonel Henry W. Shoemaker, United States Minister to Bulgaria, and himself one of the noted historians of Pennsylvania, and a lover of the great outdoors, has collected much valuable data about the mountains of our Commonwealth. The following is written from articles from his pen: The remnant of Pennsylvania's wild life, once the most varied on the entire American continent, find refuge in these wild places. Years ago our mountains harbored the bison, moose, elk, deer, panther,

wolf, wolverine, bear, fisher fox, lynx, wild cat, bald eagle, golden eagle, vulture, raven, eagle, heathcock, wild turkey, grouse, quail, wild pigeon and paroquet, but most of these species have vanished. The Indian, too, made his last home in the natural fortress walls of the Pennsylvania mountains and they are his most lasting and grandest monument.

Few are aware of the lordly height and grandeur of the Pennsylvania mountains, as not until recently were many of the correct altitudes ascertained. Some



Scene Near Hyner

are as yet uncharted, and poor roads and trails keep away the eager seekers of beauty.

Negro Mountain, Somerset County, 3,220 feet above sea level, named for Colonel Thomas Cresap's giant negro slave, ambushed and slain by Indians in 1755 and buried on the great mountain's slopes, is Pennsylvania's highest mountain peak. In the past decade fifteen other points with altitudes of about 3,000 feet have come to light. So it may be said that Pennsylvania's skyline is rising. There is much to be seen, much history to be learned and sport to be enjoyed in the Pennsylvania mountains. The log cabins are filled with antiquities, their occupants are storehouses of folklore, old ballads, proverbs and Indian lore; the grand historic mementoes of battles, pioneer struggles and Indian civilization which they reveal; the hidden haunts of deer, bears, wild turkey and grouse; crystalline springs, which flow straight from every mountain's heart; the cold brooks teeming with trout, the only pure stream left in the State. The motor tourist, the hiker, the explorer, the nature lover, the archæologist, the folklorist, the equestrian, the artist, the poet, the hunter and the fisherman all have plenty of elbow room in the wide amphitheatres of Pennsylvania's immortal hills.

Following is a partial list of some of the best known mountains of Pennsylvania, and their altitudes, the latter verified by the Department of Forests and Waters, Harrisburg, or the United States Geological Survey. The name of every one of them relates to some distinctive feature of State or local history:

*Negro Mountain, Somerset County, altitude 3,220 feet; Blue Knob, Bedford County, 3,165 feet; Mount Darlington, Clinton County, 1,950 feet; Felsbarrich, Union County, 2,300 feet; Mount Logan, Clinton County, 2,200 feet; Mahanoy

Mountain, Northumberland County, 1,300 feet; *Martin's Hill, Bedford County, 3,075 feet; Glade Mountain, Somerset County, 3,040 feet; Winding Ridge, Somerset County, 3,032 feet; Peck's Peak, Somerset County, 3,120 feet; White Oak Church Knob and Mount View School Knob, Somerset County, 3,100 feet; Laurel Run Summit, Somerset County, 3,135 feet; Big Spring Summit, Somerset County, 3,169 feet; Old Fort Hill Summit, Somerset County, 3,100 feet; Burnt Cabin Trail Summit and Forge Road Summit, Somerset County, 3,000 feet; Indian Creek Summit, Westmoreland County, 3,000 feet; Panther Rock Hill, Westmoreland County, 3,000 feet; Clay Run Summit, Fayette County, 3,000 feet; Sugar Loaf, Fayette County, 3,000 feet; Breastwork Pass, Somerset County, 2,908 feet; Frazier's Pass, Somerset County, 2,778 feet; Brier Knob and Wolf Rock, Somerset County, 2,800 feet; Pot Ridge, Somerset County, 2,800 feet; Dunning Mountain, Bedford County, 2,512 feet; Bedford Summit of Tussey Mountain, 2,541 feet; †Peaslee Hill (locally called "The Top of the World"), Potter County, 2,990 feet; Dyke's Peak and Big Savage Mountain, near the Clinton and Potter County line, 3,000 feet; *Elk Hill, Susquehanna County, 2,700 feet; *Moosic Mountain, Lackawanna County, 2,300 feet; Panther Hill, Lackawanna County, 2,200 feet; Mount Pisgah, Lackawanna County, 2,000 feet; Big Shiny Mountain, Lackawanna County, 2,320 feet; Pinnacle Hill, Lackawanna County, 2,000 feet; Council Cup, Luzerne County, 1,500 feet; *Penobscot Knob, Luzerne County, 2,000 feet; Wyoming



Mount Patrick

Mountain and the Haystack, Luzerne County, 2,000 feet; Sugar Loaf, Luzerne County, 1,666 feet; *North Mountain, Sullivan and Luzerne counties, 2,600 feet; Montour Mountain, Montour County, 2,000 feet; Ricketts Peak, Wyoming County, 2,500 feet; Big Pocono, Monroe County, 2,113 feet; Mount Parnell and Jordan's Knob, Franklin County, 2,000 feet; the King's Stool, Dauphin County, 1,200 feet; Magilligan's Rocks, Dauphin County, 1,500 feet; Spechty Cup, Dauphin County, 1,509 feet; Deer Path Hill, Berks County, 1,000 feet; The Eagle's Peak, Lebanon County, 1,000 feet; The Pinnacle, Berks County, 1,700 feet; Round Head ("Rund Cup"), Berks County, 1,600 feet; High Head ("Hoch Cup"), Centre County, 2,000 feet; Stone Head ("Stine Cup"), York County, 1,300 feet; Kalbfleish Mountain, Lycoming County, 2,150 feet; *Mount Riansares, Clinton County, 2,293 feet; Ole Bull's Castle, Potter County, 1,500 feet; Warrior's Ridge, Bedford County, 2,310 feet; Sideling Hill, Fulton County, 2,300 feet; Gandersnipe Knob, Centre County, 2,300 feet; Mammy Morgan's Hill, Northampton County, 1,200 feet; *Mount Brodhead, Potter County, 2,500 feet; Mount Nessmuk, Tioga

County, 2,100 feet; Muley Head, Cameron County, 2,100 feet; Mount Barclay, Cameron County, 2,100 feet; Dovrefeld, Potter County, 2,600 feet; Table Mountain, Lycoming County, 2,000 feet; Indian Grave Hill, Centre County, 2,300 feet; Wopsononock Summit, Blair County, 2,750 feet; Point Lookout Mountain, Somerset County, 2,950 feet—every one of them noble heights and truly sons of the clouds.

Climate—The temperature of Pennsylvania is mild and equitable in the southeastern province where the ocean influences it and where the mountains bounding it on the north and northwest are some protection from the colder winds; zero weather is of rare occurrence. The crests of the higher ridges in the central and northern regions are delightfully cool in summer, but the adjacent valleys are subject to excessive heat. In the winter these mountain valleys may experience severe cold. The western part of the Commonwealth has the climate common to the Lower Lake regions. The mean annual temperature is about 52° F. in the southeast, 50° in the center, 47° in the northwest, and 49° on the shore of Lake Erie. The summer maxima on the mountains are usually 8° to 10° less than in the valleys directly below them. There are many very attractive and popular summer resorts in the mountains. From observations taken at the Agricultural Experiment Station in Centre County for a number of years the annual rainfall ranged from 30.28 to 43.88 inches. The average monthly temperatures for January ran from 18° to 36.60° F. and the average for July from 65.40° to 76.16° F.

The Forests—The products of Pennsylvania forests were the basis of Pennsylvania's early wealth and we can see the influence thereof today. With the exception of the plantation homes in the South, there is no place to be found where houses and barns were more thoroughly constructed and commodious in facilities than in the forested area of Pennsylvania. In the development of this source of wealth the foundations of our transportation systems were laid down and manufacturing industries were established.

Indians utilized the forest as a hunting ground, but it remained for the white man to settle upon the soil and develop the great wealth inherent in the timber and the many uses to which it could be applied.

Pennsylvania once led the States of the Union in lumber production; but between 1860 and 1870, the unwarranted cutting of white pine, the most valuable tree in our forests, diminished our product to such an extent that in 1870 this wood was imported from Michigan. In 1890 other lumber was imported, and by 1918 Pennsylvania ranked twentieth on the list of lumber production. At the present time the cut in our Commonwealth accounts for only two per cent. of the total output for the United States, and provides less than twenty per cent. of our own needs.

*Surmounted by sixty-foot steel forest fire tower and lookout.

†On this mountain rise the West Branch of the Susquehanna River, emptying into the Chesapeake Bay; Genessee River, emptying into Lake Ontario; Allegheny River, emptying into Gulf of Mexico.

The forest area of Pennsylvania is 13,206,000 acres, with a stand of nearly eleven billion board feet, seventy per cent. of which is hard wood. The forests are privately owned, excepting about 1,610,000 acres now owned by the Commonwealth and controlled by the Department of Forests and Waters. These forests are located in thirty-four counties. Five million acres are barren or poorly stocked, and the depletion of the timber supply of Pennsylvania has progressed so far that by the end of the present decade all large lumbering operations will have ceased in spite of the fact that forty-five per cent. of the area of the commonwealth is covered with forests. Federal and State authorities are awake to the needs of con-



Allegheny National Forest

servation and much effort is now being put into the great forests of Penn's Woods. Our citizens survey with pride the magnificent protected forests, and look approvingly upon the steady development of a conservative policy that puts the Commonwealth in the front rank of forward-looking States.

In 1897 legislation was enacted which established the land purchase policy of Pennsylvania, which has been pursued to the present time. The Department of Forests and Waters operates the State Forests to stimulate the timber problem and to supply future needs; as a water supply conservation and protection; and as grounds for hunting, fishing and recreational purposes. The first training school and nursery were established at Mont Alto, in Franklin County, in 1902.

The forest area of the Commonwealth is divided into forest districts, each in charge of a forester, of whom there are fifty-five; these are assisted by eighty-six forest rangers and 4,400 forest wardens. The foresters and assistant foresters are graduates of forest schools of collegiate rank.

During the third of a century in which attention has been given to this important natural resource, more than forty millions of forest trees seedlings and transplants have been raised and distributed from the five large forest tree nurseries. These nurseries are located at Mont Alto, Clearfield, Greenwood Furnace, and in the Penn Forest at Potter Mills. A large nursery near Milton is conducted by the State Highway Department and the trees raised there are transplanted to further beautify the great highways of the Commonwealth.

The forests are protected against fires by a fire fighting organization in each district, and by 121 steel observation towers, each connected with headquarters of the District Foresters and Rangers by telephone. Thirty-nine of these towers are in the State Forests. These forests are accessible over 2,700 miles of excellent highways, and 3,300 miles of trails. Millions of our citizen use these forests for recreational purposes. More than 2,500 camp sites have been leased on easy terms, and each one is improved.

Impounding basins are located in the forests and many municipalities secure their water supply from these watersheds.

Pennsylvania forests are rich in the variety of tree species, and within them are found every tree native to Pennsylvania. There are approximately one hundred different kinds of trees within the Commonwealth, and because of its geographical position, here is the meeting ground of many northern and southern trees. About fifty per cent. of the native trees are classified as important, which indicates that Pennsylvania has more important timber trees than all of Europe.

Philadelphia County naturally has the smallest forest area among the counties of the Commonwealth—4,500 acres; to 565,000 acres in McKean County. The wooded area of Pennsylvania is greater than that of Italy and Greece combined, ten times that of Belgium, and more than half of that of France and Great Britain taken together. Seven of our counties contain more than a quarter of our forest land; these, which form a block in the north-central part of Pennsylvania, are McKean, Potter, Clearfield, Centre, Lycoming, Clinton, and Elk.

In contrast to this "Great Forest Region," as it has been called, are the anthracite coal districts, which are unhappy areas of devastation. Stripping operations for coal have almost banished trees for culm-piles.

On Locust Mountain, where the first forestry operations in the State began—among the earliest in America—the Girard estate and the Girard Water Company, in a quarter of a century, planted more than 250,000 forest tree seedlings, with larch more than half the total.

It is interesting to know that 3,530,000 fence posts and 620,000 railroad ties were cut from Pennsylvania farm wood lots in a recent year. Also that the census of 1930 revealed the fact that 806 chestnut tree are growing on eleven Pennsylvania farms despite the ravages of the blight, which during the past twenty years has devastated the forests of this once prolific and popular tree, the nuts of which were the best of all the fruits of the forest.

State Tree—The hemlock has been selected by act of Assembly to be the Pennsylvania State tree. The choice meets with the approval of the inhabitants, as it is the tree most typical of Penn's Woods. The prominence of the stately hemlock in the days when Pennsylvania was the leader in the lumber industry inspires enduring memories of this important timber tree. The hemlock grows naturally in every county, especially in the mountainous regions. It adds a distinctive touch to the beauty of our outdoors. A. J. Dowling, father of landscape gardening in America, pronounced the hemlock as the most picturesque and most beautiful of all evergreens in the world. Although not to be compared in size with some of the big trees of the Pacific Coast, the hemlock is ordinarily considered to be one of



Original Timber, Cook Forest

the largest of the trees of Eastern United States. Normally its height ranges from sixty to eighty feet, with a diameter of from two to three feet. Occasionally grand old specimens are found 100 feet in height with a diameter of four feet. "If Pennsylvanians were to select some one tree as characteristic of our State nothing would be better than the hemlock," said Dr. Joseph T. Rothrock, father of forestry in Pennsylvania, more than thirty-five years ago.

Next to the hemlock the white pine is perhaps Pennsylvania's most noted conifer, and it is surely one of the most important timber trees of the United States. Large and magnificent white pines may be found growing in various sections of the Commonwealth, but the original stands of virgin white pine timber have practically all fallen before the lumberman's axe. White pine ranges from sixty to 100 feet in height, with diameters of two to three feet. In the Cook Forest Park are white pines nearly 200 feet high with diameters of four feet. A single one of these pines would produce as much as 5,000 board feet of lumber.

Pennsylvania's reputation as a lumbering State centered around her forests of hemlock and pine. A timber estimate in 1873 placed the amount of hemlock at



Heart's Content, Virgin Pine and Hemlock in Warren County

seven billion board feet, nearly double that of white pine, and great as all other timber trees combined. In 1899, the banner year of lumbering in Pennsylvania, the cut of hemlock formed two-thirds of the entire lumber production; and hemlock still leads.

Dr. Rothrock measured one hemlock which was four feet ten inches across the stump, and showed 542 annual rings. This tree was a vigorous well-grown speci-

men when Columbus first sighted the New World. Another tree seven feet in diameter was reliably reported to him from Sullivan County. A white oak was recently blown down near Kutztown which was thirty-one feet in circumference—probably the largest white oak of record in our Commonwealth. What is probably the biggest swamp white oak is found near Waterfall, Clay Township, Huntingdon County. It is quite twenty feet in circumference, seventy-five feet in height, and has a spread of eighty feet. It is probably more than 300 years old. Another champion oak stands on the bank of Black Lick Creek, in Campbell's Mill Park, Indiana County. It stands ninety-two feet high, circumference exceeds twenty-two feet, and eighty feet spread. What is believed to be the largest wild cherry tree is in Lick Township, Juniata County. It has a girth of twelve feet, spread of sixty feet, and is supposed to be more than 150 years old. The prostate juniper in Dauphin is not native to Pennsylvania, but one of its rare trees.

The graceful tulip tree, or yellow poplar, has been called the handsomest of Pennsylvania's hardwoods. These trees sometimes reach a height of 200 feet in the South, though there are none of that great size in Pennsylvania. One fine specimen is in the Friends' Meetinghouse yard, Philadelphia, and another on the grounds of the Westtown School, Chester County. The latter tree is 165 feet in height, and its volume has been estimated at 6,500 board feet.

Historic Trees—The foremost of all the historic trees in Pennsylvania was the Penn Treaty Elm, which was also one of the largest trees in Penn's Woods. It is said to have measured twenty-four feet in circumference at the base. One branch extending toward the Delaware River was 150 feet long. Beneath this majestic elm the Indians were accustomed to meet in treaty even before the Founder held his "Great Treaty" here June 23, 1683, and which event has been the subject of a painting by Benjamin West. The tree was blown down in 1810, but the old elm at Shackamaxon has a number of honored descendants. Hon. Lewis E. Staley, Secretary of the Department of Forests and Waters, states that the land upon which the "Treaty Elm" stood was once owned by the ancestors of the late General Paul A. Oliver, of Oliver's Mills, Pennsylvania. A shoot from one of the roots was carefully moved to the Oliver estate near Bay Ridge, New York, where it grew for more than fifty years, when it was moved back to the soil of Pennsylvania. This tree, then seventy feet in height, was transplanted at Oliver's Mills, near Wilkes-Barre, in 1892. A grandchild of the original Penn Treaty Elm was planted on the campus of the University of Pennsylvania by Governor Hastings, on Arbor Day, 1896. Other scions of this historic tree are growing on the grounds of the Pennsylvania Hospital, Philadelphia; on the campus of Haverford College; on the campus of the Friends' School, at Westtown; and on the campus of Mercersburg Academy.

One of the largest horse-chestnut trees in North America stands near Bath, in Northampton County. It has a girth of twenty-seven feet. The tree is also his-

toric from the fact that General Washington sent the tree from Mount Vernon, when it was a seedling, to General Brown, one of his aides in the Revolutionary War, who planted it in front of his residence, and it has grown to be one of the largest and grandest of its species.

The old Donegal White Oak which stands before the Donegal Presbyterian Church, in Lancaster County, is truly historic. It is also affectionately known as



The "Witness Tree" at Donegal

the "Witness Tree," because under its branches in September, 1777, the congregation there pledged their loyalty to the cause of liberty, when informed by an express rider that the British Army, under Lord Howe, had left New York to invade Pennsylvania. This majestic oak is still standing, preserved by many generations of tree lovers. It is estimated to be about 300 years old.

Another historic tree is the Tiadaghton Elm, also popularly known as the "Liberty Elm," which stands on the West Branch of the Pine Creek, near Avis.

Clinton County. It is believed to mark the spot where, on July 4, 1776, the early settlers of that section of Pennsylvania met and signed the "Pine Creek Declaration of Independence." The tree still stands and is considerably more than 200 years old.



Avenue of Poplars at Quentin

The mammoth "Lafayette Sycamore" overhangs the house at Chadd's Ford which was occupied by General Lafayette as his headquarters during the battle of Brandywine, September 11, 1777.

State Flower—Pennsylvania was the last State in the Union to adopt an official State flower. For the past quarter of a century nearly every General Assembly considered one or more bills which named some flower as the State flower, but every one met with opposition and none became a law. The General Assembly, in 1933, passed two bills, one designating the azalea and the other the mountain laurel. The Governor signed the bill making the American mountain laurel the State flower of Pennsylvania.

The mountain laurel (*Kalmia latifolia*) is one of the most popular shrubs in eastern United States and it is indeed a splendid representative of Pennsylvania's many beautiful flowers. The mountain laurel has a rather wide distribution in eastern North America. It extends from New Brunswick southward, generally along the mountains, to Florida and westward to Arkansas. In the North it is not



Mountain Laurel, the State Flower

a large shrub. In Pennsylvania it may attain a height of fifteen feet, but in the South shrubs forty feet high with a stem diameter of twenty inches may be found.

Perhaps no flower is more beautiful in symmetry, color and design than is that of the mountain laurel. On the inner surface of the cup-shaped corolla are ten colored pockets into which the anthers of the ten stamens fit snugly. The outwardly bent filaments of these stamens are under a spring-like tension until the anthers are set free from the pockets by the visiting insect as he alights upon the flower in search of the nectar which the flower abundantly secretes. When the anther is released from the pocket the filament quickly bends inward with a very quick, trigger-like motion, the anther is thrust toward the center of the flower, where it strikes the hairy insect and dusts it with pollen, which is carried to the stigma of another flower, thus producing cross-pollination.

The mountain laurel is a very appropriate State flower. The only serious objection to it is its poisonous character if eaten, but perhaps since it has been chosen as the State flower, everybody will become informed as to its poisonous qualities.

State Parks—There are nine State parks in Pennsylvania under the administration of the Department of Forests and Waters, each of which has been created by an act of Assembly either through direct gift to the Commonwealth or by appropriation of funds for the purchase of the park area. Each has associated with it history distinctly its own, and each is popular.

Valley Forge Park—The encampment at Valley Forge of General Washington and the Continental Army in the dark and cold winter of 1777-78, where the ragged patriots endured great privations and suffering, has been administered as a public park by the Valley Forge Park Commission since 1893. The reservation embraces nearly 1,500 acres, and includes most of the ground occupied by the troops, as well as extension acquired to protect this most historic shrine in America from undesirable encroachments. The line of entrenchments and the headquarters of General Washington and von Steuben can still be seen. The "grand parade," the National Memorial Arch and many majestic monuments mark important points.

Washington Crossing Park—Next in importance to Valley Forge, as a shrine of the American Revolution, is Washington Crossing, which marks the spot where the Continental Army crossed the Delaware River on Christmas night, 1776, and, under the leadership of General Washington, surprised and captured the Hessians at Trenton. Pennsylvania and New Jersey have each established memorial parks on their respective sides of the river at Washington Crossing. This beautiful park is in Bucks County, and many well-known historic shrines are preserved for the public.

Roosevelt State Park—This park is also in Bucks County, and is a strip of the old Delaware Canal, first constructed by the Commonwealth in 1831, operated by the State until 1858, when it passed into the possession of the Lehigh Coal and Navigation Company. The portion of the Delaware Division between Raubsville Lock and Yardly was formally transferred to the Commonwealth of Pennsylvania on October 17, 1931, to be administered in perpetuity by the Department of Forests and Waters as a State Park. This old Delaware Canal with its forty miles of shaded roadway and beautiful scenery is a mecca for people seeking recreation and rest in the out-of-doors. Boating, swimming, and ice skating are features of this park.

Pennsylvania State Park at Erie—This State Park was established in 1921, when 3,200 acres were transferred to the Commonwealth without cost. The peninsula and bay of Presque Isle and the harbor of the city of Erie are within part of the area. Nearby is the place where the fleet was constructed which Commodore Perry used to defeat the proud British squadron during the War of 1812. Nearly ten miles of concrete highway has been constructed on Presque Isle, and facilities have been provided for bathing, boating, fishing, and picknicking.

Bushy Run Battlefield State Park—This historic place is in Westmoreland County and memorializes one of the most decisive battles ever fought between white men and Indians, and which played an important rôle in the Pontiac War. Here Colonel Henry Bouquet and his Highlanders and Pennsylvanians, by a brave resistance and clever stratagem, won the battle of Bushy Run, August 5 and 6, 1763.

The progress of settlement toward the west had been temporarily halted by the Pontiac War, but this great victory opened up that country. The area of the battlefield is embraced in the 132 acres now owned by the Commonwealth.

Drake Well Memorial Park—The great industry of oil is responsible for this lasting memorial to Colonel Edwin L. Drake, who drilled the first successful oil well in the world, August 28, 1859. The site of this historic well is the gift to the Commonwealth from the American Petroleum Institute. The Drake Well Memorial Park is situated on the left bank of Oil Creek, in Venango County. It is near the city of Titusville.

Fort Washington Park—This historic park is in Montgomery County, and includes within its area Militia Hill and Fort Hill, on which was erected Fort Washington, and where the Continental Army was encamped and where the battle of White Marsh was fought, and won by the Americans, in December, 1777.

Fort Necessity Park—This historic park marks the site of the battle of Great Meadows, July 3, 1754, when Major George Washington and a small force of Americans resisted a superior force of French and Indians, which battle was the opening event of the French and Indian War, the result of which was that the territory west of the Allegheny Mountains should not be governed by the French. Washington was so much interested in this battleground that in his later life he purchased the farm on which it lay, and held it until the time of his death. This park also marks the first military engagement of George Washington, and the only one in which he commanded prior to becoming commander-in-chief of the Continental Army, and incidentally the only place where he was ever compelled to surrender. Fort Necessity Park is about six miles southwest of Uniontown, in Fayette County.

Cook Forest Park—This area of dense and vigorous growth of the most valuable virgin forest, mainly composed of white pine, consists of 6,500 acres beautifully located along the winding Clarion River, and lies in the counties of Clarion, Forest and Jefferson. The Cook Forest Park was created by act of Assembly, in 1927, for the purpose of perpetuating a portion of the original forests of the primeval Penn's Woods. The axe of the lumberman has never invaded this forest. Many of the trees now standing in the park were here when William Penn first came to his Province. While the big trees, especially the white pines and hemlocks, in this last remaining stand of virgin timber in Pennsylvania, are the principal attractions, the park is one of the most popular in the Commonwealth for its excellent facilities for everything which contributes to make the great out-of-doors attractive. Every possible assistance has been rendered to make it an ideal place to camp, fish, swim, hike, and indulge in every form of athletics. Hunting is not permitted, but many visit this park to observe the wild game, including deer. Log cabins and tents may be rented at a nominal charge from the Department of Forest and Waters.

Allegheny National Forest—In Northwestern Pennsylvania lies the new Allegheny National Forest, first established by Presidential proclamation some nine years ago. The purchase unit comprises 740,000 acres, of which about 350,000 acres, in Elk, Forest, McKean and Warren counties have already been acquired or approved for purchase. In addition to serving the purpose of timber supply and flood protection, this great area, flanked on the North by the Allegheny State Park of New York and on the south by the Cook Forest, offers recreational possibilities of great significance, "like a breeze bearing health from kindly places," to the crowded centers of population in our Eastern United States.

State Forest Parks—Within the State forests are nine State Forest Parks maintained for the use of tourists, recreationists and other forest users. These are equipped with tables, benches, shelters, comfort stations, and firewood, and an abundant supply of pure water is convenient. These parks range in size from four to 260 acres, and cover a total of 805 acres. A short description of each follows:

Caledonia State Forest Park, containing 260 acres, is one of the beauty spots of Southern Pennsylvania. From it reach out many beautiful forest roads and trails. Here Thaddeus Stevens, in 1837, established the Caledonia Iron Furnace, for which the park is named. The ruins of this old furnace are marked with a bronze tablet. The park is located in the Michaux State Forest, in Franklin County, in the heart of the South Mountains, along the Lincoln Highway, about fifteen miles west of Gettysburg.

George W. Childs State Forest Park is the most picturesque of all the parks in the Commonwealth forests. It contains three beautiful waterfalls and unsurpassed cascades and scenery. Fifty-two acres were deeded to the Commonwealth by the late George W. Childs, for many years editor of the "Philadelphia Public Ledger." The park is located in the Delaware State Forest in Pike County, along the Silver Creek Road between Stroudsburg and Milford.

Voneida State Forest Park, comprising fifteen acres, is the most extensively used park of the State Forest in Central Pennsylvania. Here lived for many years "Hairy John" Voneida, an eccentric hunter and backwoodsman, who, because of difficulties with his neighbors, vowed that he would never cut his hair or beard while he lived as a hermit in the mountains. The park is in the Bald Eagle State Forest in Union County, between Lewisburg and Bellefonte.

Mont Alto State Forest Park is in the Mont Alto State Forest, Franklin County, on the Caledonia-Mont Alto Road, about seven miles southwest of Caledonia. The park was developed for the Mont Alto Iron Company, which was later operated by the Cumberland Valley Railroad Company. Adjacent to the park are

the Pennsylvania Forest Research Institute, the State Forest School, operated by Pennsylvania State College, the Mont Alto Forest Nursery, and the sanitarium for tuberculosis at Mont Alto.

Leonard Harrison State Forest Park, consisting of 128 acres, occupies a small plateau overlooking majestic Pine Creek Gorge in Northern Pennsylvania. It is one of the wildest and grandest sections of the Commonwealth. The gift to the Commonwealth for recreational purposes by Leonard Harrison, of Wellsboro. It is situated in the Tioga State Forest, about ten miles southwest of Wellsboro.

Colerain State Forest Park is in Huntingdon County, and takes its name from Colerain Forge, which for many years stood a short distance from the park, and was one of the famous forges of Central Pennsylvania. A winding trail connects this park with Ice Cave Gap, where ice may be found throughout the year. Excellent trout streams are numerous. Ruins of a stone cabin, the home of former Governor D. R. Porter, when he was engaged in the iron business, may be seen near the old forge site.

Sizerville State Forest Park, containing seventy acres, is in Elk State Forest, in Cameron County, near Emporium-Keating Summit Highway, about half a mile from Sizerville. There is an excellent swimming pool and a large spring of mineral water, reputed to have medicinal value. From the Fox Mountain Forest Fire Observation Tower, at an elevation of 2,400 feet, excellent views of the dense forest region may be obtained.

Greenwood State Forest Park, named for the Greenwood Furnace, the ruins of which mark an important period in the great iron industry which once thrived in this region. The park contains 120 acres, and is situated in the Logan State Forest in Huntingdon County, five miles north of Belleville.

Hemlock State Forest Park, one of the finest remaining stands of original hemlock, the State Tree of Pennsylvania, is in the Tuscarora State Forest, in Perry County. Here is a picturesque mountain gorge, cool rushing stream, veteran hemlocks and pines, and varied foliage, all maintained in its original charming natural environment.

Forest Monuments—State Forest Monuments are areas of singular beauty set aside within the State forests for permanent preservation in a natural condition. Here plant and animal life is wild and primeval, according to the ways of nature. These restricted areas are to be preserved undisturbed in their wilderness that the people of Pennsylvania for all time to come may be able to visit choice remnants of the glorious Penn's Woods of olden days.

James Buchanan State Forest Monument marks the site of the birthplace of James Buchanan, fifteenth President of the United States. Although the small

house in which Pennsylvania's only President was born has been removed to Mercersburg, a stone pyramid, twenty-five feet in height, set among Norway spruce trees, marks the spot where the house stood. It is located in the Buchanan State Forest District, Franklin County, near the village of Foltz.

Bear Meadows State Forest Monument, covering an area of about 350 acres, is a famous retreat of foresters, botanists, and students of wild life. Here one sees the balsam, fir, tamarack, black spruce, and other swamp plants, such as the rare pitcher plant and sundew, all associated with almost impenetrable thickets of laurel and rhododendron. This monument is situated in the Logan State Forest in the Seven Mountains of Centre County.

Detweiler Run State Forest Monument consists of about fifty acres of giant original white pine and hemlock. The monument is at the headwaters of Detweiler Run in the Logan State Forest in Huntingdon County.

Snyder-Middleswarth State Forest Monument, of 425 acres, within which is one of the largest bodies of big timber in the State forests. Here one can see 250 acres of original hemlock, white pine, and hardwoods never touched by the axe. It is named for two of the most prominent families of Central Pennsylvania, represented by Governor Simon Snyder, the third Governor of the Commonwealth (1808 to 1817), and Captain Ner Middleswarth, statesman and soldier of the War of 1812. It is situated in the Bald Eagle State Forest along picturesque Swift Run, about five miles west of Troxelville, Snyder County.

Alan Seeger State Forest Monument, of about thirty acres, lies along Stone Creek on the Logan State Forest. This monument is adjacent to the Detweiler Run State Forest Monument, also in Huntingdon County.

Joyce Kilmer State Forest Monument comprises about twenty-one acres of giant hemlock and a few white pines, and was named in honor of the young American poet, Joyce Kilmer, who made the supreme sacrifice in the World War. It is located on the north slope of Paddy Mountain, Union County, in the Bald Eagle State Forest, between Woodward and Hartleton.

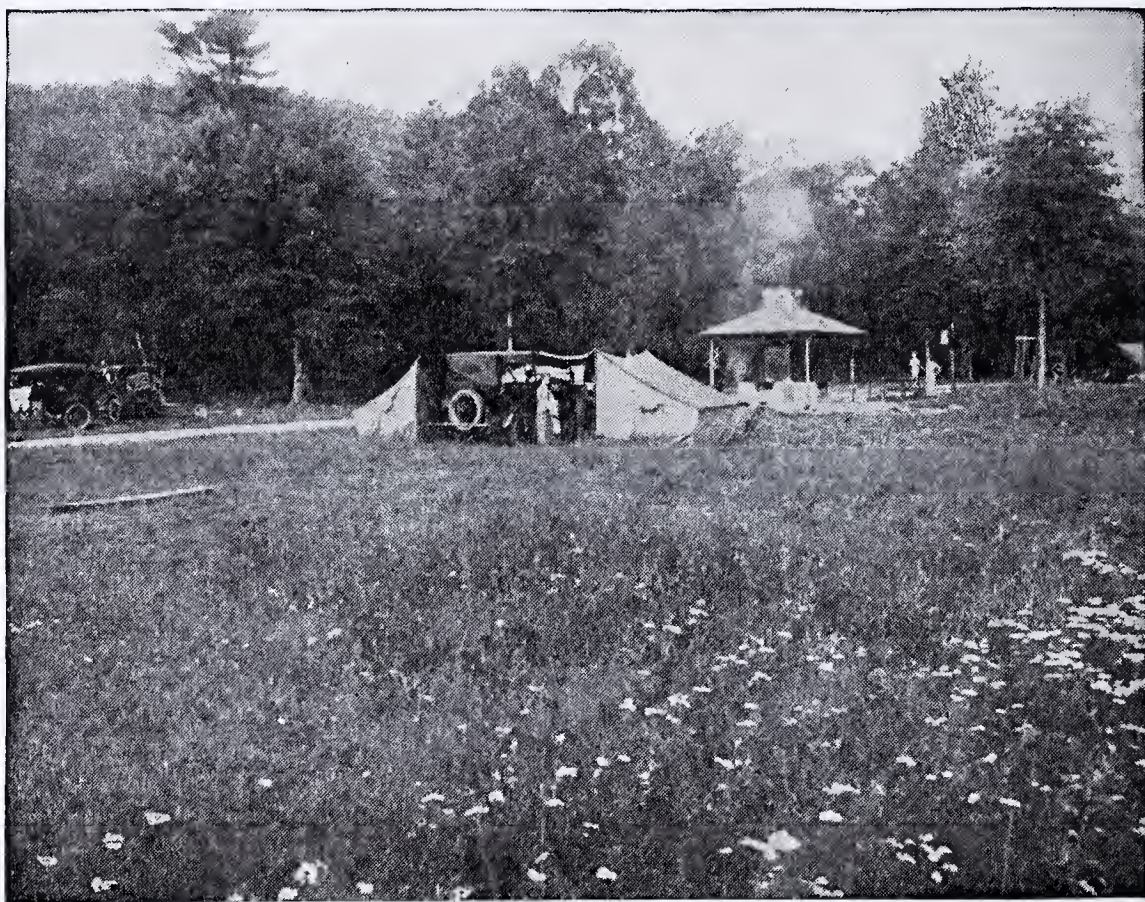
Ole Bull State Forest Monument marks the site where Ole Bull, the world-famous Norwegian violinist, attempted to establish a settlement of his fellow-countrymen of 800 in the Black Forest in 1852. The remains of his imposing castle, overlooking the picturesque Kettle Creek of Northern Pennsylvania, still stand. It is situated in the Susquehannock State Forest, near Oleona, or twenty-nine miles southeast of Coudersport, Potter County.

McConnell Narrows State Forest Monument contains some of the most magnificent rock scenery in Pennsylvania and superb stands of original hemlock and white pine. Set in the Bald Eagle State Forest on the southern slope of White

Mountain in Union County, near Laurelton. Named for former State Senator Hon. William C. McConnell.

Mount Logan State Forest Monument—From the top of Mount Logan within this monument, and at an elevation of 2,200 feet above sea level, one of the finest views in the Commonwealth is obtainable. This monument, which contains a number of remnants of superb original white pine and hemlock, is in the Bald Eagle State Forest in Clinton County, near McElhattan. Close to the foot of Mount Logan is Camp Shoemaker, an attractive, well-equipped and popular camping ground.

Mount Riansares State Forest Monument comprises about thirteen acres of rugged scenery, and on top of Mount Riansares, the highest point within the



In a State Forest Camp

monument, is a forest observation tower, from which are available magnificent views in all directions. Named for the Duke of Riansares, husband of Maria Christina, former Queen of Spain, who owned timber and coal lands in Pennsylvania and who directed that the highest peak of her Pennsylvania possessions should be named for her husband. In the Bald Eagle State Forest in Clinton County, near Loganton.

Martin's Hill State Forest Monument includes Martin's Hill, one of the highest points in the Commonwealth, with an elevation of 3,075 feet above sea level. A magnificent view of southern Pennsylvania may be had from a forest observation tower on the summit of this mountain. It is located in the Buchanan State Forest in Bedford County, near Rainsburg.

State Forest Public Camps—In addition to all the parks fifty sites in the State forests for temporary camping and picknicking have been set aside and furnished by the Department of Forests and Waters. These are equipped for the convenience and comfort of the public, and are very popular, especially to tourists.

CAVES IN PENNSYLVANIA.

During the year 1930 the Department of Internal Affairs published a booklet by Ralph W. Stone, describing the better known caves which have added to the many attractions of Pennsylvania, due in part to their becoming accessible through good roads, and in many cases to the fact that they have been prepared for visitors, and are well advertised. Because of their beautiful rock formations, and of their location under the surface, they will always be a source of interest, and there are not two alike. A second edition, describing many additional caves examined since the first edition, was published in 1932.

Many will be surprised to know that there are fourteen caves in Pennsylvania of sufficient size and importance to be of commercial value, and seventy-eight other caves which are undeveloped, but large enough to be listed by Mr. Stone, and there are many others of local interest, but not of sufficient importance to be listed.

The Alexander Caverns is the name of a wonderfully fine underground water course situated in Mifflin County, about nine miles north of Lewistown, and three and a half miles from Reedsville. The plural name is used because one part of the cave, a former water course, is now dry, and the other part is a sizable stream. The dry cave is traversed on foot while the visitor must use a boat in the wet cave. These caverns were not discovered until 1926, although early settlers in this region used a huge spring, issuing from a hole large enough for cattle to enter, which opened shortly in a spacious cavern. In 1926 some boys were exploring the wet cave, and crawling over a clay bank, about four hundred yards from daylight and well above the stream, they discovered the dry cave, an underground wonderland of cave formations, never before seen by man.

The Alexander Caverns are entered by a flight of 115 steps of concrete, to a depth of sixty-five feet below the surface, into the dry cavern, where a veritable fairyland is beheld of delicate pencils and films, and ponderous stalactites and blankets pendant from the ceiling, and sturdy domes, stumps, and columns rising from the floor. The precipitation of calcium carbonate ranges all the way from minute drops on the roof and low knobs on the floor, through sizable stalactites and stalagmites, to complete columns, and from slender to massive and bulky forms. The various rooms are Cathedral, Garden of the Gods, and the Chamber of Statues. The dry cavern meets the wet one nearly at right angles and ends at a dock where boats are moored. One passageway is nearly a quarter mile in length, and all of it can be seen from the dock; but the boat trip in the opposite direction follows for a quarter of a mile through a varied and ever-changing scene of encrusted forms of every description. The greatest width of the wet cavern is 160

feet, the total length exceeds 2,000 feet, and twice this distance is traversed in the route. A trip through both caverns requires more than an hour. The temperature is 52° at all seasons of the year. More than sixty of the formations have been named; some are pure white, a few cream colored, and some streaked with red. The caverns are beautifully illuminated.

The Baker Caverns, one mile south of Williamson, Franklin County, are several in number, the largest has a narrow entrance, which soon widens, and at 100 feet of passageway it turns abruptly and descends into another gallery about 125 feet long. Considerable quantity of dripstone, travertine, and stalactites and stalagmites are to be seen. These make many interesting formations, of which the umbrella, bake oven, cathedral and pulpit are the most prominent. The caverns are not entirely developed, but those now opened to the public are spacious, well lighted and paved with crushed stones.

The Crystal Cave is in Berks County, five miles west of Kutztown. It was opened to visitors in 1873, and so has been known longer than any other cave in Pennsylvania. It was discovered in 1871 by William Merkel, while quarrying limestone on a hillside eighty feet above the creek. The property changed owners the following year, when the cave was placed in condition for visitors.

Crystal Cave is not as large as some of the others, but it is a roomy cavern, and has a great variety and abundance of cave formations. The cave has a twelve-foot entrance, and a flight of steps leads to a higher level and a larger room, about 40x150 feet. The ceiling here is a beautiful blend of blue, orange, buff, and white. The chief formations of this cave are named Frozen Mountain and Crystal Ball Room, in which sparkling white calcite crystals abound, giving the famous cave its name. The cave onyx assumes many shapes in the main caverns, and dozens of them are named and easily recognized. Crystal Cave is 360 feet long, and has been explored for about two thousand feet. It is a natural curiosity of much interest.

Hipple Cave is situated in Bedford County, about twelve miles north of Everett. According to tradition this cave was discovered by the owner's great grandfather, a pioneer named Hipple, who tracked a bear to the hole. The cave has surely been known for several generations, but was not opened for the public until 1928. The cave is in limestone beds, the entrance to which is called the Bake Oven, and is a large chamber, through which visitors descend by a flight of stairs of fifty steps to a low passage. Near the foot of the stairs a small stream dashes into view and follows along the tunnel for two hundred feet. For a few rods the roof is low, but rises to fifty feet in height and continues so for the three hundred yards of passageway. The main features are the Staircase, the Tunnel, the Allegheny Mountain, the Pillar of Salt and the Palm Tree. The latter is a complete column and very unusual. A profile, very much resembling the Martyred Lincoln, is so named, and many other formations are named and easily identified. The cave is 1,200 feet long, and a trip through it is a walk of a half mile.

The Historic Indian Cave is in the northern part of Huntingdon County, at Franklinville. This historic cave is named from the evidence of Indian occupation. Tradition says that in 1816-20 David Lewis, the robber, a veritable Robin Hood of Pennsylvania, and his band of highwaymen, used this cave as a retreat, and perhaps too as a storehouse for their plunder. Lewis is supposed to have been fed by a family living near the cave, when he was in hiding. This cave was opened for visitors in 1928, after hundreds of Indian artifacts were found, consisting of fragments of pottery, arrow and spear points, celts, and other articles used by the aborigines. The artifacts are on display in the cave, and have been identified as belonging to both the Iroquoian and Algonkian nations. Flowstone and dripstone are abundant, and the various rooms and passages are lined, hung, and studded with stalactites, stalagmites, and cascading curtains of calcium carbonate, all revealed by hidden lights. There are an unusual number of formations of a most unusual variety, many of them named and easily identified. There is a so-called Lily Pod Pool, a grotto far back underground, and a spring of crystal-clear water forms another pool which discharges over a natural spillway to the lower pools. A most novel feature is the grotto of Wahwah-taysee, where a luminous mineral on the ceiling glows like a myriad of fireflies, when the lights are turned off. Legend says the Indians were afraid of this room as the haunt of evil spirits, hence its name. As developed at present the visitors are guided through about 1,700 feet underground. There are stretches of more than a mile yet to be developed.

Indian Echo Cave is on the bank of the Swatara Creek, near Hummelstown, Dauphin County, and was opened to visitors in 1929, but it has been known for many years, first as Hummelstown Cave, from its location, and afterward as Echo Cave, from the echoes heard in certain places.

Amos Wilson, the hermit, lived in this cave for a period of nineteen years. The story of this recluse is well known in Dauphin County, where he was a prominent citizen more than a century ago. His young and much loved sister was betrayed and abandoned by her lover. She was found guilty of killing her child and was sentenced to be hanged. The Governor finally yielded to the pleadings of Amos Wilson and granted a pardon, but Wilson was unavoidably detained on his return from Philadelphia by the swollen streams, and reached the place of execution with the pardon just after the law had claimed her life. Remorse over the cause and manner of his sister's death, and the fact that he was too late to save her life, made him shun human society, and for the remainder of his life, a period of nineteen years, he lived alone in this cave. He spent his time in philosophical writing, and from his publications, and mode of living, he came to be known as "The Pennsylvania Hermit." The place where he had his bed, table, and fire are still to be seen.

This cave is 400 feet long and 250 feet from the entrance the room is eighty feet wide, and the ceiling fifty feet high. From one corner of this large room a passage extends northward about 200 feet. The features of this cave are a large stalactite,

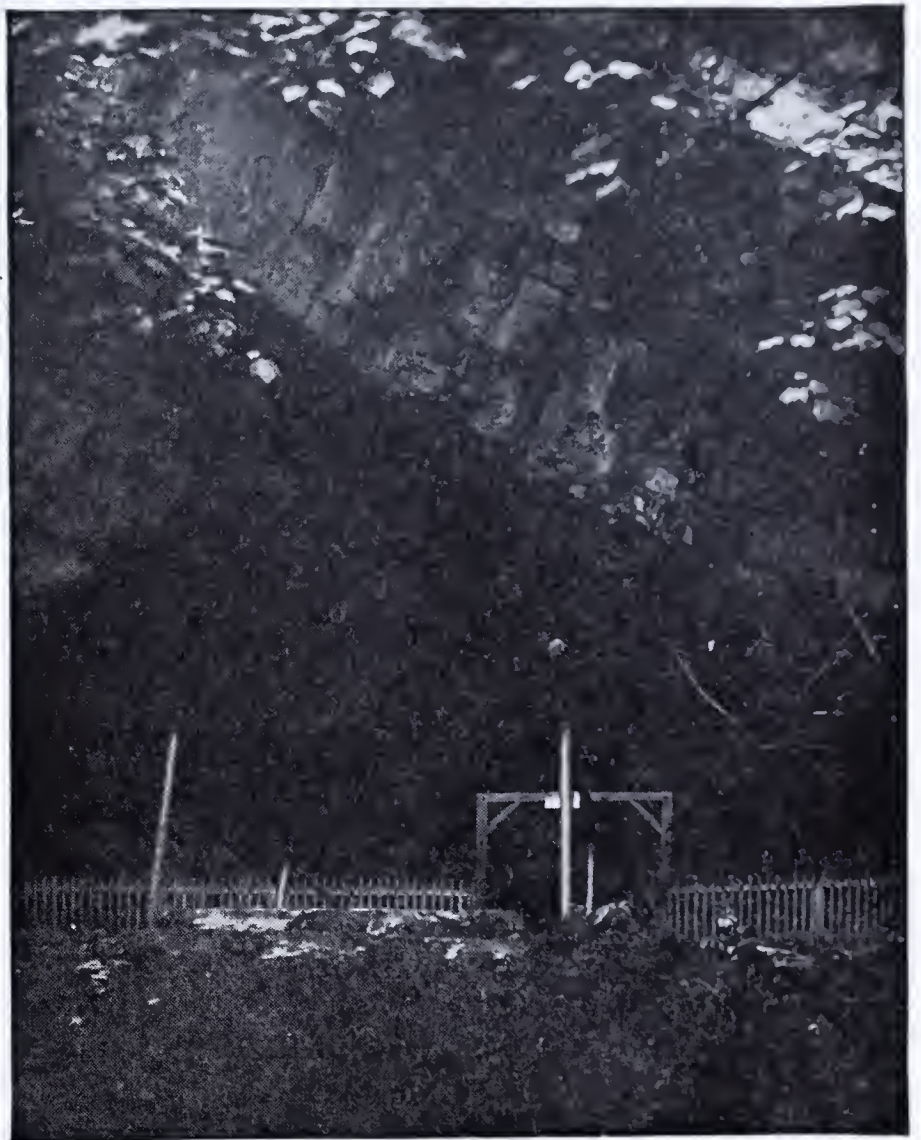
about ten feet long by two feet in diameter, called an Ear of Corn, which hangs at the rear of the Ball Room; the Blue Room, where the ceiling is distinctly blue, in contrast with the gray walls; and a natural bridge with a Frozen Waterfall above, which is an interesting cave onyx formation in this part of the cavern. There is a Hanging Garden, a North Canyon and East Canyon, and a Totem Pole, all of which are worthy of special description. A new cavern was opened to the public in 1931, which is 150 feet long, and contains a fine display of stalactites, stalagmites, and dripstone formations.

The Lost Cave is in Northampton County, about half a mile east of Hellertown. It was discovered in 1883 at the base of a limestone ledge. Because of its location so near Lehigh University, at Bethlehem, it has been visited for educational purposes for many years. It was not opened for visitors, however, until 1930. The rooms are hung with stalactites and beautiful crystals of cave onyx which sparkle in the dripstone which covers the walls. The cave extends almost straight back for 400 feet, but the windings and the side galleries make the journey one of twice this distance. One room is 150 feet long, thirty feet wide and thirty feet high; in some places the height reaches a distance of seventy feet. In the Lake Room the floor is covered with four feet of water, and an underground stream may be seen for about seventy feet.

The Onyx Cave is in the northern part of Berks County, about seventeen miles north of Reading, four miles from Shoemakersville, and two miles from Virginville. This cave has been known since 1872, when a blast in a limestone quarry broke into it, but for fifty years it remained unexplored, and was only opened to the public in 1929. The cave is twelve and fifteen feet wide for about sixty feet, then an eight-foot passageway for one hundred feet. The cave abounds in cave onyx and flowstone formations; one large stalactite fallen from the roof thousands of years ago lies on the floor, where it is spanned by a deposit of cave onyx forming a natural bridge, which is one of the most striking views to be found in any of the caves. In addition to the Natural Bridge, there is the Monument, Cathedral, Turkey, and Pipe Organ. There are many named formations in the trip through the cave of about 220 yards. This is one of the most important of the caves from a geologic point of view, and has a greater variety of features than some of the larger caverns.

Penn's Cave is in the eastern part of Centre County, four and a half miles from Centre Hall. Its name is from Penn's Creek, which rises in it. The cave has been known since before 1800, but according to Indian legend, a Frenchman, named Malachi Boyer, from Lancaster County, entered the region about 1748, many years before any white settlement had advanced west of present Sunbury. Boyer was friendly with the Indians, especially Chief Okocho, who had seven sons and a daughter, Nita-nee. Malachi found the girl cleaning a deer hide and was attracted by her beauty and industry. A clandestine courtship resulted in a marriage which

was frowned upon by the Indians. Malachi and Nita-nee stole away one night, planning to reach the white settlements below and there make their home. The fugitives were pursued and overtaken by the seven brothers, and Malachi was brought back and tortured by a novel method. He was thrown into the stream at the mouth of Penn's Cave, where the water is thirty feet deep. When he was exhausted from swimming, for the Indians kept him from climbing up on the ledge, he swam back into the dark recesses of the cave and there crawled out of the water. Indians guarded the small exit to the dry cave also, and Malachi swam and crawled about for a week trying in vain to find another exit. When hunger became unbearable, and the brothers of Nita-nee repulsed every attempt at escape, Malachi used his last strength to hide himself, and there he died. After several days, Malachi failing to appear at either exit, his Indian tormentors searched the cave, found his body, and sank it with stones in the deepest part of the underground river. To this day, on a still summer night in the depths of the cave, some who know this old Indian legend think they hear the plaintive call, "Nita-nee, Nita-nee," as if Malachi's spirit still longs for his Indian sweetheart.



Entrance to Penn's Cave, Near Centre Hall

There is another story. Mifflin Sargeant and Caroline Hager, who had ridden horseback from Stover's, in the Seven Mile Narrows, tied their horses under a pine tree and entered Penn's Cave on the morning of December 24. They had an abundance of torches and expected to light one from the other, so when a sudden gust of wind blew out their lighted torch, and Mifflin's matches failed to ignite another, these lovers found themselves in difficulty. The farmer folk living near the cave were away on a hunting trip, and it was the third day before the hungry and restless horses called attention that some one must be lost in the cave. The young people were quickly rescued, and to this day hold the record for spending Christmas without fire light, fire, or food in the recesses of the cavern.

It was not until 1860 that the underground stream was explored by raft, when a school teacher, Isaac Paxton, and a farmer, Abert Woods, were the navigators. After their discoveries a boat was built and trips in the cave were thereafter fre-

quent occurrences for the people of that region. In 1885 the cave was opened for visitors, when the natural curiosity became most popular. Penn's Cave is the only cave in Pennsylvania through which visitors are taken only by boat. Until 1929 the trip was a half mile in length; since then an opening has been made so that the boats can make an exit in an old mill pond, and then return to the starting point, a distance of one mile. The chief features, besides the delightful boat ride through these mystic caverns, are the Garden of Gods, Rock of Gibraltar, Pittsburgh Snow Drift, Niagara Falls, Statue of Liberty, and hundreds of named formations. Here the dry cavern is among the finest in the State with its many cave onyx formations.

Seawra Cave is in Mifflin County, four miles from Alfarata, on a dirt highway. It was opened in 1928, and is not as well known as the others which are commercial. Boys found this cave while hunting for treasures believed to have been buried in this vicinity by a veteran of the Civil War. The cave is developed for more than 600 feet from the opening, but there are other chambers and passages not yet prepared for visitors. The main features are the Crystal Palace, Garden of the Gods, Table of the Last Supper, and the Bridal Chamber. There are many interesting formations, and at one point are "chimes" of calcite pendants that are musically resonant when struck. When the highway is improved this cave will be popular.

The Veiled Lady Cave is in Centre County, east of Center Hall, and not far distant from Penn's Cave. This cave was explored in 1867 by J. H. Chatham, the "Poet of the West Branch Valley." The cave is about one-quarter of a mile deep, but the roof is too low after about 325 feet from the entrance. The cave does not have many formations as far as developed. Just inside the entrance, high on the left, is a white formation resembling a woman seated upon a ledge. This figure is the veiled lady for whom the cave is named.

The tradition about the Veiled Lady was told to Mr. Chatham by an elderly woman named Grenoble. The story is that the McCochrans were the proudest family in Brush Valley, and it was the boast of old Michael McCochran that for twenty generations neither side of his family had contracted a lowly marriage. At an assembly of Indian chiefs with the Swedes, Huguenots, Scots, and Irish to sign some land papers, Patricia McCochran, the attractive daughter of old Michael, became suddenly enamored with a young stalwart and handsome Seneca warrior, named Strongheart. It was a case of love at first sight, and they planned to flee to Strongheart's lodge in Canada. They were to meet that night at the mouth of the cave. Patricia eluded her parents, arrived at the cave, seated herself on a ledge, and awaited the coming of her lover with his ponies. It was a bitter cold night and Patricia drew her heavy veil and cloak about her with some impatience, for this aristocrat never willingly awaited for anyone. Her love was so great that she restrained her impulses and waited for her Indian lover. A biting wind chilled her and the drifting snow caught on her veil, her body, and then her mind became numb, and her heart turned to snow within her.

According to the legend, Strongheart had approached the cave before the appointed time, tied his ponies at a short distance, and proceeded down the slippery path on foot. He stepped on a caltrop, or poisoned barb, set there by some whites who hated and feared the Indians. With a groan of agony Strongheart put the other foot down, only to pierce it with another caltrop. Knowing that death was near, he crawled on hands and knees to the entrance of the cave, hoping to live until Patricia arrived, that he might die in her arms. Grenoble Run was swollen and pouring into the mouth of the cave and the rocks were covered with ice. Strongheart slipped, rolled into the stream, and his body was carried by the rapid waters into the cavern, where it disappeared far underground to the hidden lake. His last cry of pain and despair can still be heard in the depths of the cavern, and Lady Patricia, his promised bride, heavily veiled, still sits at the cavern's mouth, shrouded in white cave formation.

The William Penn Caverns, not quite four miles west of Huntingdon, were discovered when drilling in a limestone spur while building that part of the William Penn Highway. This cave has more than 500 feet of underground passages ready for visitors. The cave is rich in interest. Massive stalagmites, called The Pagodas, stand just inside the entrance. The Palace of Splendor, the Purity Room, Wall Street, and the Statue of Liberty are some of the wonders shown the visitors. The lighting effects are good and the cave is popular.

The Wonderland Caverns at Manns Choice, Bedford County, are located in two quarries of limestone. The northern cave is the older, the entrance to one below it has been closed for years by fallen debris. The cavern, which is open to the public, has a fine entrance gallery, which contains abundant flowstone and is flanked by limestone bed studded with fossils. Stromatoporoids, brachiopods, and horn corals are to be seen in this first gallery. The larger gallery, more than 100 feet in length, contains a pit at one end in which there is a pool of water. The caves have many fine stalactites and stalagmites, and flowstones and dripstones are exceedingly abundant, and in many interesting forms. There are some calcite crystals of various shapes. The caverns are interesting and very beautiful.

Woodward Cave is in Centre County, and only two miles distant from the village from which it takes its name. This cave was opened to the public in 1925, but it is one of the oldest known caves in the State. It was frequented by Indians before the advent of the whites, and is also reported to have been the refuge for a band of robbers a century ago. The entrance is large enough for man and horse to enter. Pine Creek once flowed through the cave when it was at flood height, but in dry seasons it disappeared below ground before reaching the entrance. To open this cave for visitors the creek was diverted down the valley by another course. The cave is 500 yards long, and is unlike others in Pennsylvania in that the limestone bedding lies flat, the passages are along joint planes, and the walls of the

narrow passages are in some places well rounded. The cave includes one room 100 by 200 feet, with a pillar in the center. In the quarter-mile trip through the cave only the first 100 feet are retraced. The principal formations are a group of stalactites called the Hanging Forest, a large stalagmite pile called Tower of Babel, and a pool called Crystal Lake.

The cave was known to the Indians as Red Panther Cave because of the following legend: Red Panther was the son of an aged Seneca chief, whose tribe lived in the Valley of the Beech Tree. The beech tree was there beloved by the Storm God, and was immune from lightning, and it was revered by the Indians, who met beneath it during fierce thunder and lightning storms as they were safe from danger. Personal triumphs, however, turned the head of Red Panther and he became cruel and warlike. He respected neither the beech nor the Storm God, and often threatened to destroy the tree to prove he was mightier than the Great Spirit. Finally, after a successful hunting excursion, the young brave cut down the beech, and then ordered it cut into proper lengths and heaped on a huge pile, when Red Panther himself leaned forward to ignite the blaze. As he did so a terrific peal of thunder echoed through the clear sky, followed by a flash of crimson lightning. The entire tribe was stunned by the shock, and upon their recovery, found the lifeless body of Red Panther lying across the kindled fire. The Storm God had taken his revenge. The old chief, father of Red Panther, was the first to reach his side, but he was dead. Hoping to appease the wrath of the Storm God, the chief decided to place Red Panther's body in the cavern, which had long been revered in religious ceremonies. After prolonged prayer, the mortal remains of Red Panther were placed in the largest chamber in the cave, placed in state, and left alone in its natural sepulchre.

After due time the old chief and his followers returned to the cave, expecting that the Storm God would relent and restore Red Panther to life. Instead, they found that water from the roof of the cavern had fallen on the body and bier, and had turned the whole into solid stone. The outlines of the body were preserved in rock formation, and fearing another sacrilege, the old chief and his followers withdrew, leaving Red Panther to sleep his last long sleep undisturbed.

UNDEVELOPED CAVES.

The undeveloped caves of Pennsylvania are described briefly as follows:

Arch Spring Cave is on a branch of Sinking Run in Blair County, about five miles south of Tyrone, and two miles from Union Furnace. Here is a small settlement known as Arch Spring, named from a limestone arch through which Sinking Run emerges into daylight. The report on the geology of Blair County, published in 1881, says of this cave and spring: "A small stream flows east for a mile and a quarter, and then sinks into a large cave. From the cave to Arch Springs, a distance of 4,200 feet, there is no surface flow of water, as it all flows through the cave." There are several sink holes, about fifty feet deep and 150 to

200 feet across, all of which have pools at the bottom. One of these may be entered for about 175 feet, and it is quite possible that further exploration can easily be made. There is an overhanging ledge of dripstone. The next appearance of the stream is just above Arch Spring, where there is a vertical sink hole 100 feet long, fifty feet wide, and thirty feet deep, with a pool at the bottom. The stream which makes this pool passes out through an arch twelve to fifteen feet in diameter, which arch gives the name to the place.

Bear Cave is on the west side of Chestnut Ridge in Westmoreland County, on land owned by the Commonwealth. It is on a ledge of cross bedded siliceous limestone, known locally as "blue stone," and to geologists as the Loyalhanna limestone. Several sizable holes lead in the same cavern, and in wet weather a small stream enters through one of them. Mr. Stone was easily able to work his way down the slope about 400 feet, where the passages were too narrow to pass without crawling through water. Local people, however, have explored the cavern for a mile or more.

In Bethlehem there is supposed to be a cave under the Sun Hotel, opposite Hotel Bethlehem. It once gave access to the creek, and later was used for sewage disposal, but the entrance to this cave has long since been filled up. Another cave of considerable extent is reported to be along the Lehigh Valley Railroad, south of Calipso Island, in the Lehigh River, but it is now fouled by river overflow and is not easily located.

Carpenter Cave is a tiny but pretty cavern on the Carpenter farm, situated a quarter of a mile from the Delaware River, and a mile northeast of the hamlet of Raubsville. The entrance hole is very small and the passages narrow. It has been explored for 100 feet and contains some beautiful dripstone having a clean snow white translucency. There are also some small "lily pod pools" on the floor, and one large stalactite and stalagmite joined to form a column nine inches in thickness and two feet high.

The Caves of Coburn are near the village of that name in eastern end of Centre County, on Pine Creek. This cavern is said locally to contain a stalactite known as "Red Panther's funeral pyre." This, however, seems to be confused with the Woodward Cave, seven miles farther up the same creek.

Stover Cave, two miles above Coburn, has the reputation of considerable extent. It is in the woods about a quarter of a mile west of Stover's farmhouse in a sink hole area. The mouth is large enough for a man to enter, but it has not been explored for more than 100 feet from this entrance. There are indications of passages, now closed however, which may reveal a large cavern. Mr. Stover told Mr. Stone that a boy had been lost in the cave many years ago, and when finally rescued was underground in the proximity of the schoolhouse, which is a quarter of a mile from the mouth of the cave.

Conodoquinet Cave is in the bank of Conodoquinet Creek, one and a half miles north of the square in Carlisle and 200 yards above a mill dam. The entrance is at the base of a limestone cliff called Cave Hill, and is so close to creek level that flood waters enter. This cave has long been known and often visited. The entrance is a semi-circle arch about ten feet high and ten feet wide, which descends gradually to an ante chamber of considerable size. This vaulted passageway extends 270 feet to a point where it branches off in three directions. On the right water percolates through the rocks on every side, but leads to a large chamber of great length; the central one is narrow and crooked, and has never been completely explored on account of a deep perpendicular precipice which prevents all progress beyond about thirty feet; the third passage is smaller and has little interest. Human bones have been found in this cavern, and no doubt it has been used as a place of refuge or temporary lodgment by the Indians. No such artifacts as are usually deposited with their dead have been discovered. The cave is all on one general level. Sink holes in the immediate vicinity suggest that the cave may have greater extent. The walls are almost devoid of cave onyx, but it contains some massive dripstone.

David Lewis, the robber, whose home was in Carlisle, where he was born in 1790, is known to have escaped several times from officers of the law and found refuge in "a cave on the banks of the Conodoquinet Creek, less than two miles from Carlisle." This is according to his own written statement, made in the Bellefonte jail, where he spent the last month of his eventful life, and died there, July 13, 1820. Lewis said that this cave and another on Little Chickies Creek, near Mount Joy, Lancaster County, were the storehouses for the major portion of the ill-gotten loot of his gang. When hiding in the Conodoquinet Cave the landlord of a hotel, in sight of the cave, would display a flag when the coast was clear, and Lewis was thus advised of the approach of officers seeking him. Food was carried to him in his hiding place by those who never suspected they were befriending an outlaw.

The Dulany Cave is in Fayette County, seven miles south of Uniontown and three miles southeast of Fairchance, on the west side of Chestnut Ridge, near the head of Cave Hollow. There are two entrance holes, one small, the other large enough that horses can enter it. It is said that a band of outlaws secreted themselves and their horses in this cave. Dulany Cave, in common with Bear Cave, is in the Loyalhanna limestone or "blue stone" that outcrops for many miles along Chestnut Ridge and Laurel Hill. The main passage extends in a nearly direct course about 430 feet to a room about seventy-five in diameter, where huge fallen blocks prevent passages which lead to greater depths and other caverns. Other rooms have been explored and it is said that one can proceed a long distance toward the foot of the mountain. Some stalactites occur, but they are mostly in the more remote and more inaccessible places. There is one room about ten times the size of the first one, and the measured length of the cave exceeds 2,000 feet. This cave was explored by John A. Paxton, of Philadelphia, September 11, 1816, who, with five men, tried all the passages. He says they traveled upwards of two miles.

Dreibelbis Cave is in the northern end of Berks County, three miles from Virginsville. It is in the vicinity of the Onyx Cave. The opening is very small to this dry cave. It is about 200 feet in length and contains some cave formations, one of which is a huge stalagmite, about five tons in weight, and resembling a dragon.

The Durham Cave is in Bucks County, less than a mile from Riegelsville. The entrance is from an old stone quarry a few hundred feet north of Durham Creek. Scull's map of 1770 locates this cave, and it is mentioned in Hazard's "Register" in 1828. The entrance is six feet across and the interior consists of three large rooms, each about ninety feet long, of varying width up to forty, and each twenty feet high. The total length of the cave is about 300 feet, and a small portion has water in it. The size of the cave has been much reduced by quarrying operations until now only a part of the last large chamber remains. An interesting collection of bones was made in this cave in 1856, twenty different species of animals were found in the collection, but in 1893 Dr. Henry C. Mercer reported two dozen additional animals, of which several are now extinct in Pennsylvania, and one, the peccary, is not known to have inhabited this region in historic time.

Frankstown Cave is in Blair County, two miles east of Hollidaysburg. It was opened accidentally in April, 1907, during a quarrying operation. In the dirt on the floor of the cave many fossil bones were found which the Carnegie Museum found to be a surprising variety, some of which were of a mastodon. The cave is now destroyed. It contained organic material, fallen blocks of limestone, and some cave onyx. Bones of one adult and five small mastodons were found in a second chamber. There were bones of musk oxen, peccary, sloth, tapir, bison, bear, and many other animals trapped in this cave. Some of these bones are on exhibition in the Carnegie Museum in Pittsburgh.

The Hartman Cave is in Monroe County, near the top of Godfrey Ridge, a mile northeast of Stormville, and two and a half miles southwest of Stroudsburg. It is unique among caves of Pennsylvania in that the opening lies along the crest of a ridge and extends through the limestone inward for 225 feet, at which point the fallen roof prevents further passage. This cave is also known locally as Crystal Hill Cave. The cave has a nearly level floor, and has a most unusual structural form, but contains no stalactites or stalagmites. It was explored by geologists in 1880, when the remains of two animals, now extinct in Pennsylvania, were found, the caribou and bison; there also were the bones of many other animals and quite a collection of Indian weapons and utensils.

Maiden Creek Cave is in Berks County, on the bank of Maiden Creek, near Calcium Post Office. It is in the face of an old quarry and is a small cavern of a single room.

Monmouth Spring Cave is in Mifflin County, three miles from Reedsville, where a large tributary of Honey Creek comes in from the west. The stream issues

from a hole under a limestone ledge large enough for cattle to enter. The cavern is 160 feet wide and the stream covers the whole floor. It was while exploring this underground river in 1926 that boys discovered the Alexander Caverns. This underground river emerging as Monmouth Spring is the stream on which the boat trip is made in Alexander Caverns.

Mapleton Cave is in Huntingdon County, on the north bank of the Juniata River, at the north end of the bridge at Mapleton Depot. It was discovered during a quarrying operation, when a blast designed to bring down a vast quantity of limestone instead disclosed a large cave back of and partly below the level of the quarry floor. The cave was directly on the main highway and was never developed. It extends 1,500 feet southward and nearly 400 feet in northeast. The latter portion has not been explored, as fallen rock blocked the passages. The cave possesses some very beautiful and unusually large stalactites and stalagmites, and these have been protected from vandals destroying the formations.

The Naginey Cave is in Mifflin County, two miles east of Milroy. When Edgar Allen Poe visited here in 1838 he was much impressed with this large cave. The cave was destroyed in blasting the limestone. The abundance of sink holes in the valley between Naginey and Reedsville indicates the soluble character of the underlying limestone and suggests the presence of other caverns as yet undiscovered.

Needy Cave is in Franklin County, two and a half miles southeast of Waynesboro, on the bank of Red Falls Creek. It was mentioned by H. D. Rogers in 1858 as a rather extensive cavern. The entrance is small but opens immediately into a room about twenty by fifty feet and fifteen feet high, but devoid of any natural cave ornamentations. A passage leads off from this room into another smaller one, which is the beginning of a long straight passage of about 200 feet in length. There is water in this room and further exploration is difficult to make and there are not especially attractive features.

Port Kennedy Cave is in Montgomery County, on the Schuylkill River, just below Valley Forge. Geologists have taken much interest in this cave because of the remains of extinct animals found in it, such as the giant sloth, two horses, tapir, peccaries, a mastodon, bear, etc. A total of fifty-four mammals, forty-one of which are now extinct in Pennsylvania. This cave is about ruined by quarrying operations.

Redington Cave is in Northampton County, about five miles east of Bethlehem, and is one of the largest undeveloped caves in Pennsylvania. Part of the cave has been quarried away, and now the entrance is through a narrow passage into a large room circular in shape, about fifty feet in diameter, with a ceiling forty feet high. A passageway extends to the left for 250 feet in a straight line. Further exploration is difficult, but lights reveal other rooms which continue for a hun-

dred feet or more. The cave contains more formations than any other undeveloped caves, and even excels several that are commercially exploited. There are many stalactites and considerable white dripstone, which at places makes beautiful cascades. Another type of deposit is the arborescent calcite that is here beautifully developed. They make a winter landscape of sleet encrusted shrubs. In the ceiling is a small crevice and about fifteen feet from the floor is a layer of travertine. This cave should be further explored.

The Reese Cave is in Franklin County, two miles southwest of Fort Loudoun, at Dutchtown. It was discovered in 1832 by a man named Reese, who was digging a well. At a distance of twenty feet below the surface the well broke into a cavern in which was a running stream, which has been the domestic water supply since that date. Some of the stalactites have been removed. The course of the cave upstream from the well is about 200 feet, then northwest for 275 feet. In some parts of the cave the ceiling is covered with myriads of stalactites, and 150 feet from the well a shelf of cave onyx projects six feet from the well. Then in a short distance the dripstone has built a series of terraces, and there are some small pools. There is a natural bridge, and 500 feet from the well the underground stream enters the gallery, and further explorations are stopped. There are some interesting dripstone formations. Sink holes nearby indicate the presence of other caverns and possibly a dry cave.

Boyer Cave, at Mount Pleasant Mills, Snyder County, is entered from a limestone quarry and has an underground length of about one-quarter mile. It contains much interesting cave formation.

There are three caves in sandstone on top of Blessing Mountain, north of Warrensville, Lycoming County. These are narrow, being extensive crevices formed by separation of the sandstone along joints. They extend from fifty to seventy-five feet below the surface, and are dangerous to visit because of loose rocks in the roof.

Two caves are at Cleversburg Junction, near Shippensburg. One is entered from a limestone quarry. The narrow winding passages permit one to go underground about 200 yards. The other cave is nearby on top of the hill, but is difficult to explore because of large quantities of slipper clay, precipitous slopes, and the need of a rope ladder.

There is a cave at Bowmansdale, Cumberland County, which has considerable length, but a cave-in has closed the passage, except for 100 feet from entrance.

The remainder of the listed, but undeveloped, caves are located as follows: Hineman Cave, nine miles west of Kittanning, Armstrong County; Mt. Dallas and New Paris caves, Bedford County; Dragon Cave, on Sacony Creek, Berks County, known since the Indian days, contains a dragon formation, hence its name, and Dreibilis, Hobo, Mohrsville, Montello, Noeker, Pinnacle, Schofer, or Sacony Cave, Sinking Springs, South Temple, Tuckerton, West Reading, Slate, Phillips, Merkle, Morgan, Conrad Weiser, and Greshville, all in Berks County; Gromiller

and Hollidaysburg, in Blair County; Brukerhoff Cave, Bucks County; Madisonburg, Rebersburg and Rossman caves, Centre County; Boiling Springs, Lemoyne, Mechanicsburg, and Walnut Bottom, in Cumberland County; Brownstone Cave, Dauphin County; Barton and Casparis caves, Fayette County; Goods Cave, Franklin County; Hall and Sharpsburg caves, Huntingdon County; Strangeford Cave, Indiana County; Gable, Mt. Joy, Pequea Church, Refton, and Wind Caves, Lancaster County; Beverly Hills Cave, Lebanon County; Dougherty and Eiswert caves, Lycoming County; Aitkin, Allensville, Johnson, Milroy, Reedsville, and Rupert caves, Mifflin County; Narehood Cave, Montour County; Cold Air and Indian caves, Northampton County; Girty's and Ickesburg caves, Perry County; Haas Cave, Snyder County; Dales and Winfield caves, Union County; Rolly's Cave, Westmoreland County; and Lisburn and North York caves, in York County.



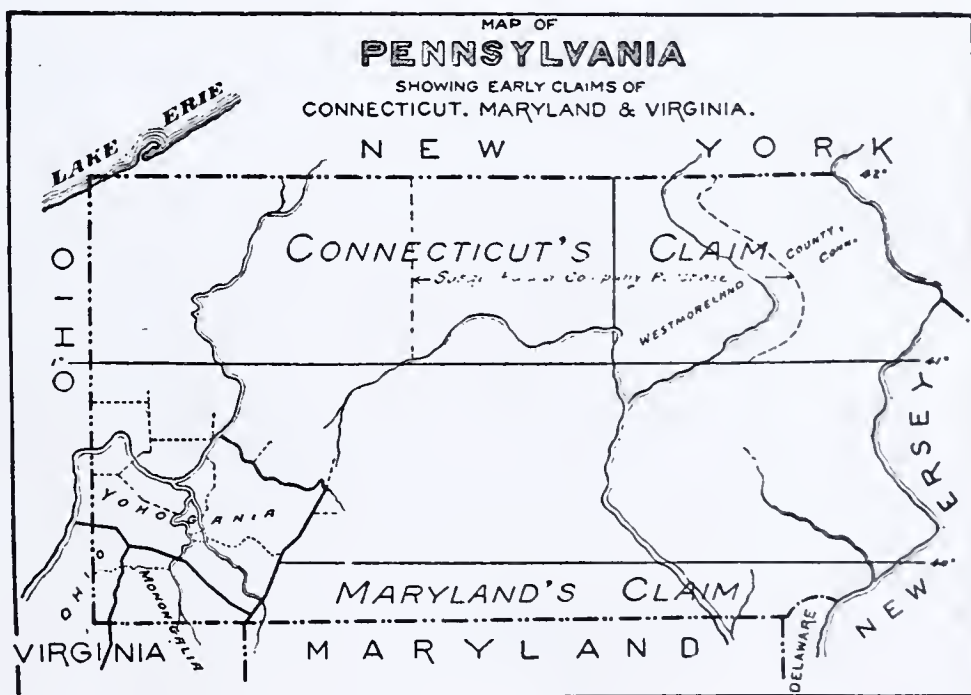
CHAPTER II.

BOUNDARY DISPUTES.

The early history of Pennsylvania is largely taken up with three important boundary disputes that, at one time, threatened her very existence as a province, which if decided against her, would have reduced her territory to a narrow strip of land barely sixty miles wide and less than three hundred miles long, and of small commercial and political importance. These disputes were with Maryland and Virginia on the south, and with Connecticut and New York on the north. William Penn was annoyed with these controversies, and long after his death the several proprietaries were concerned with this vexing question.

The first scene in the conflict of claims to land in what is now Pennsylvania began when King James I, of England, placed his royal signature to a patent to the Council of New England, November 3, 1620. Upon these

worthy men the King, not knowing what he was giving, and at the same time assuming that he had a right to give it, bestowed "all that Circuit, Continent, Precincts and Limits of America, lying and being in Breadth from Fourty Degrees of Northerly Latitude, from the equinoctial Line, to the Fourty-eight Degrees of the said Northerly Latitude, and in Length by all the



Breadth aforesaid through the Maine Land from sea to sea," and directed that it be called New England. This company was substantially a reincorporation of the adventures of the Northern Colony of Virginia, with additional privileges. This vast territory extended along the Atlantic coast line from Delaware to Labrador, and its new owners were awake in their efforts to unload it upon prospective settlers as soon as possible.

In March, 1629, the Governor and Company of Massachusetts Bay in New England promised to pay a fifth part of all gold and silver ore they might obtain in return for a parcel of this grant extending along the Atlantic in the neighborhood of "Boston on the east parte and to the South Sea of the west parte." This was the first royal charter for Massachusetts.

In 1631 a grant was obtained along the shore of Long Island Sound, but this was soon sold to the Connecticut Colony, which, under the guidance of John Winthrop, petitioned Charles II for a charter entitling them to govern themselves. A constitution for the government of Connecticut was approved January 14, 1639, and the King granted the Colony a charter in 1662.

So far the titles were clear, but in the following year the King manifested his ignorance of the geography of America when he granted to his brother, James, the Duke of York, the Hudson River and contiguous territory in spite of the fact that the stream flowed through Massachusetts and Connecticut grants. He further complicated matters by adding to the grant all that part extending from the west side of Connecticut, which according to the charter of 1662, was to be the Pacific Ocean.

The charter of Charles I to the second Lord Baltimore gave him all that part of the Delaware peninsula lying under the fortieth degree of latitude, and west of that part of the eastern shore claimed by Virginia—provided such lands were unoccupied. Claiborne, of Virginia, was on Kent Island, but he was ousted as a squatter. DeVries had planted a colony at Swanendael, present Lewes, Delaware, in 1631, but the place was abandoned in April, 1633. When Calvert landed at St. Mary's City, in present Maryland, in 1634, the soil within the charter was held by no whites, except Claiborne and his followers. Calvert, however, settled on the western shore of the Chesapeake, and in 1638 the Swedes were on the Delaware, with an Indian title, forts and guns. The Dutch conquered the Swedes; the English conquered the Dutch; Charles II gave to the Duke of York whatever title belonged to DeVries and Godyn by reason of the purchase and settlement of Swanendael, and William Penn again bought the Duke of York's title.

In another outburst of generosity the King liquidated a debt owed to Admiral William Penn by granting to his son, William, March 4, 1681, that territory which we enjoy as Pennsylvania, in return for two beaver skins annually, and the usual one-fifth part of all gold and silver ore. The deed was drawn with care, after consultation with the Duke of York and Lord Baltimore, so that there should be no interference with their territorial claims.

Nevertheless, Pennsylvania years afterward settled with difficulty her southern boundary. It was not until the circle about New Castle determined the boundary with Delaware, and the survey of the Mason and Dixon Line determined the boundary with Maryland. For twenty years she struggled with Virginia over her western limits, and was driven to violence and bloodshed with Connecticut over the termination of the northern boundary. The boundary dispute with New York was never severe, and was settled when a line was run from the Delaware River, in 1785 to 1787 to Lake Erie, and that part, since known as the Erie Triangle, was purchased from the United States Government April 3, 1792.

The eastern boundary of Pennsylvania is determined by the Delaware River, and at no time was open to dispute. It was confirmed as the boundary between New Jersey and Pennsylvania by an act of September 20, 1783.

There were three important points of boundary dispute with Maryland; first that which related to the lines between Maryland and Delaware, which province had been deeded to Penn by the Duke of York, and became a part of Pennsylvania, known as The Territories, or the Three Lower Counties; the second was in relation to the northern boundary of Delaware on Pennsylvania, that peculiar and curious half-circle; and the third was about the line which this circle was supposed to cut, and which would start westward from the circle, and form the boundary line between Maryland and Pennsylvania, now long known in history as Mason and Dixon's Line.

In this boundary dispute Lord Baltimore had observations taken of the latitude of New Castle, Delaware, which showed that town to be $39^{\circ} 39' 30''$, which would place the end of the fortieth degree many miles to the north, and its beginning far beyond the reach of the radius of twelve miles as called for by Lord Chief Justice North of England. A degree of latitude is a band about sixty-nine and a half miles wide, extending around the earth parallel to the equator. Lord North, William Penn, Lord Baltimore and others, in the absence of better knowledge, simply assumed that the degrees on the maps were all too far south, which was only a guess, but in fact they were nearly correct.

Penn, after obtaining his charter, sent William Markham, his cousin and deputy, to the Delaware to take an observation of the latitude, and he was to meet Lord Baltimore, or his agents, and settle the boundaries. This meeting was held in Upland, now Chester, in the latter part of the year 1681. From the results of the observation an absurd mistake in latitude was revealed, and the fortieth degree, the southern boundary of Pennsylvania was found to be twelve miles farther to the North. Lord Baltimore already knew that the end of the fortieth degree was many miles north of its position on Captain John Smith's map, and he renewed his old claim that his province of Maryland extended to the fortieth degree complete. Thus began the controversy which lasted twenty years, during which time it exercised the lawyers, perplexed the statesmen, vexed the Privy Council, and drove the borderers to madness.

Lord Baltimore's claim carried the northern boundary of Maryland far into Penn's province, just north of Philadelphia, and if successfully defended would have cut from the southern part of the Commonwealth all the territory south of a line running through Philadelphia, Downingtown, just south of Lancaster, and north of York, Bedford, Somerset, Connellsville, Brownsville, and the village of West Finley in Washington County.

Penn, however, had a strong case to defend his territorial limits, his charter expressly defined the southern limit of Pennsylvania as on the beginning of the fortieth degree, which would make its southern limit reach nearly to the city of Washington, and would have cut off from Lord Baltimore's province much more territory than he was trying to cut from Penn's. Penn also possessed the later grant from the Crown, and in such a dispute, where the limits overlapped, it would

be taken to have annulled the older. Penn was willing to yield his stronger position and compromise; all he demanded was that the line be placed where it was supposed to be when his charter was granted. The mistake in latitude made Penn's boundary on the Delaware ridiculous, for the circle of twelve miles from New Castle could not possibly touch the beginning of the fortieth degree, which was forty miles to the south of it.

It would have been unfortunate to obstruct the settlement of this country by putting claims in which both seemed to be justified, but Penn did even more than expected. He offered to purchase from Baltimore sufficient land to give Pennsylvania a harbor at the head of the Chesapeake. At another personal interview with Baltimore, at West River, he proposed a compromise even more favorable to Maryland by suggesting that additional territory should be given Baltimore to make up the loss of the increased length of a degree, which was recently ascertained to be sixty-nine and one-half instead of sixty miles. This would have placed the northern line of Maryland about seven miles north of the head of the Chesapeake.

Penn wanted to possess Delaware as it would give him a long water frontage down to Cape Henlopen and complete control of navigation to his province, so he procured "The Three Lower Counties" from the Duke of York.

Lord Baltimore refused all compromises offered by William Penn. He fancied he could obtain great acquisitions of territory and was determined his province should consist of the present Maryland, Delaware and the southern strip of Pennsylvania above described. Hence the controversy was thrown in the Privy Council, where the case was argued for two years, the Council finally deciding that Baltimore's charter did not give him a title to Delaware, because at the time of granting the charter that region had been in possession of the Dutch, and they ordered Baltimore and Penn to divide Delaware equally between them by a north and south line, midway between the Chesapeake and the Delaware. The decision of the Council was confined to the controversy between Delaware and Maryland, and nothing was said about the disputed boundary of the 40° between Maryland and Pennsylvania, and it remained unsettled.

This condition proved a great hardship, the inhabitants on the border, uncertain of their position, refused to pay taxes to either government, and the sheriffs of adjoining counties carried on a warfare of petty annoyance. This gave the rougher and lawless men an excuse for fighting. One of the most notable of these was Thomas Cresap, a mixture of Indian trader and hunter, called by the Indians, in return for his liberal hospitality, the "Big Spoon."

William Penn died July 30, 1718, leaving the question as unsettled as it was in 1682. Charles Calvert, the fifth Lord Baltimore, was now the proprietor of Maryland, and the first of the family to show much cleverness. He went to Penn's widow and admitted he had no just claim to the title of Delaware, and suggested that no more land should be granted near either of the disputed borders by either government for eighteen months, within which time they could settle all difficulties.

This agreement was signed in February, 1723, and long after the eighteen months had passed into history, the agreement was faithfully observed by Hannah Penn, and after her death by her children, and Baltimore also observed it.

William Penn's widow died in 1726, and her young sons did not immediately mark the boundary, but Baltimore now assumed the rôle of an injured person, and, in 1731, petitioned the Crown to compel the Proprietors of Pennsylvania to join with him in settling the boundaries. He applied to John and Thomas Penn to meet with him and sign an agreement of settlement, which they agreed to do, when they also accepted the terms proposed in it by Baltimore and the articles were signed May 10, 1732. The southern boundary of Pennsylvania was fixed about seven miles north of the head of Chesapeake, and the same as William Penn had offered Baltimore in their interview at West River. By this agreement Lord Baltimore received more land than had ever belonged to him. Nothing could have been more fair and satisfactory than this agreement, for it placed the boundaries where common sense and justice demanded, and where Dutch delegates, the Privy Council, King James II, William Penn, and everybody, except the Baltimores, had always said it ought to be. A map was prepared and attached to the agreement, on which the boundaries were plainly marked. This map was prepared by Baltimore, and the Penns accepted it as correct.

As Baltimore had offered the agreement, and all his suggestions had been accepted by the Penns, there was every reason to suppose that he would be the one more ready to fulfill it. Each side appointed commissioners to mark the lines, and they were given eighteen months to complete the work, namely, to December 25, 1733. John Penn sailed for Pennsylvania, and Lord Baltimore to Maryland. Baltimore soon began to take advantage of every trivial circumstance for delay, even to hindering his own commissioners from meeting with those of Penn, and the eighteen months came without a foot of the boundary line being marked.

Thomas Penn informed the Council, May 14, 1734, that the business then to be considered by them related to some very unneighborly proceedings in the province of Maryland, in not only harassing some of the inhabitants of this province who live on the border, but likewise extending their claims much farther than has heretofore been pretended to be Maryland, and carrying off several persons and imprisoning them. He advised the Council that Marylanders had entered the settlements of John Hendricks and Joshua Minshall, on the Susquehanna, in Lancaster County, in what is now York County, and carried them off to Annapolis and confined them in jail.

The Governor arranged with Andrew Hamilton, Esq., to appear for the prisoners, who was accompanied by John Georges, his secretary. They made a full report to Governor Penn, in which Hamilton related that they were denied an interview with the prisoners, but this was allowed them the following day, when they gave an account of their arrest. They did not know what charges were lodged against them.

The lawyer then appealed to Governor Ogle, who advised them that the charges against the prisoners were serious. Hamilton suggested that even if this be true the men were taken into custody by Maryland officials on Pennsylvania soil, and should be punished in that province. Governor Ogle then enumerated the many abuses the inhabitants of Maryland had suffered from those of Pennsylvania. This interview ended by appointment for a meeting before Council on the following morning. At this meeting, which was pretty much bluff and bluster, very little was accomplished. It was, however, agreed that each party should reduce their claims to writing and then present them to the King for settlement.

Hamilton prepared his instrument and ably defended the part of Pennsylvania, and recited the agreements of 1724 and 1732, which were intended to quiet all disputes on the border until actual surveys should be concluded. He stated that notwithstanding these agreements, "two of his Majesty's subjects, John Hendricks and Joshua Minshall, inhabitants of Lancaster County, settled upon lands legally surveyed and patented to them under the proprietors of Pennsylvania, on the west side of the river Susquehanna, had been taken from their homes, which were at least eight miles to the northward of Philadelphia, and about twenty-three miles to the northward of the line agreed upon by the aforesaid articles to be the northern bounds of Maryland, which line runs near the mouth of Octoraroe Creek, to the northward of which Maryland has never exercised any jurisdiction, except over thirteen families, that is known to Pennsylvania, till within two or three years, about the time when an absolute boundary was agreed upon by the proprietors, though Pennsylvania has maintained its government as far southward as the mouth of the said creek for above these thirty years."

The jail was too filthy to hold further conversation with the four Pennsylvanians and permission was obtained for the sheriff to take them to his home, where the interview was continued. They insisted they had never done or said anything against Lord Baltimore, and that if such was charged against them Thomas Cresap is the only man wicked enough to bring such false charges. Hamilton could not get his clients into court as they were under prosecution in Provincial Court, and Governor Ogle would not interfere.

Several interviews were held with the Governor, even in his own home, but at each the executive insisted on reviewing a long list of transgressions along the border and would not agree to anything Hamilton had to propose. On May 25 the most important session was had and Governor Ogle refused even to concur in the proposal made by Hamilton that they agree upon bounds which should be judged reasonable, upon which lands no persons should plant new settlements under severe penalties. Hamilton and Georges then said, in their report, that they saw from the first that the Governor was resolved to avoid doing anything that might prevent further differences upon the boundaries. The Governor finally ceased to further discuss the question.

When the prisoners were tried in Provincial Court they were denied their liberty, lest it should be understood as giving up his Lordship's rights to the lands in

question. Hamilton then drew up a memorial, citing the unreasonable proceedings of Maryland and the absolute necessity Pennsylvania would be under for its own protection. It was a strong argument, but of no avail. They returned to Philadelphia in disgust, in consequence of which the Governor, under date of August 19, 1734, wrote to the justices of the counties of Chester, Lancaster on the Susquehanna, and New Castle, Kent and Sussex on the Delaware, as follows:

You are not, I believe, insensible how much the whole country has been disappointed in the just hopes which had been entertained of seeing a final period put to those long pending disputes between this Government and that of Maryland, touching their respective boundaries, by the execution of the solemn agreement concluded between the Proprietaries of each. It is, however, no small satisfaction to me that I can now acquaint you that this agreement, with the proceedings of the commissioners thereon, having been laid before his Majesty's attorney and solicitor general, we have had the pleasure of lately receiving the opinion that the agreement still remains valid and binding on both Proprietaries, although their commissioners, by reason of difference in sentiments, have not carried into execution.

Now, as the northern bounds, formerly set by Lord Baltimore to himself, differ not much from those lately agreed upon, I know not how we can judge better or with more certainty of any bounds by which we limit our present jurisdiction than near the place where it is known they will fall when the lines shall be actually run.

In the meantime, that a stop may be put to any further insults on the people of this Government, and encroachments on lands within the bounds of the same, I am again to renew to you those pressing instances I have repeatedly made, that agreeable to the duty of your stations, you exert your utmost endeavors for preserving peace throughout your county, and protecting all the inhabitants in the just and right possessions, in legal and necessary defense of which every person ought to be encouraged to appear with boldness, and to be assured of receiving all the countenance that lawful authority can give.

And as the late disturbances have been in a great measure owing to the unjust attempts of those who, pretending right to, or claiming disputed lands, under that pretense, have come many miles into this Province, and with force possessed themselves of lands for which they can have no lawful grant from any other persons but our Honorable Proprietaries only, and have likewise committed very great violence upon sundry of our inhabitants, you are to give strict orders for apprehending and securing all such who have been principals or accessories therein, as well as those who hereafter shall presume to offer an injury to the persons or professions of his Majesty's peaceable subjects or encroach on any lands within the known and reputed limits of your county, that they may be brought to condign punishment.

But as in the year 1724, it was agreed "that for avoiding all manner of contention or difference between the inhabitants of the two Provinces, no person or persons should be disturbed or molested in their possessions they then held on either side," you are desired still to have a particular regard to those entitled to the benefit of that agreement, while they behave themselves peaceably.

The letters then gave implicit instructions to the sheriffs, directing them to frequently visit the borders, particularly where the disturbances happened, and give all assistance possible to the injured and apprehend those who caused the trouble and seize and secure them. It was particularly fortunate that the Indians continued to live amicably with the settlers at this period.

On January 14, 1727, John Digges, an Irish nobleman of Prince George's County, Maryland, had obtained from Lord Baltimore a grant for ten thousand acres of land upon part of which the borough of Hanover, Pennsylvania, is situated. When Lord Baltimore gave this grant, the land was thought to be in his own province, and, under the direction of Tom, a noted Indian chief, Digges settled upon



Oldest School West of the Susquehanna River, Gettysburg

his grant, which became known as "Digges Choice." The first settlers were Catholics, who started, in 1730, the Conewago Settlement, in the vicinity of present Hanover. There were a few adventurers who crossed the Susquehanna as early as 1727, and some Scotch-Irish settlers took up land in the southern part of York County as early as 1733.

At a Council held with the Indians in Philadelphia, in 1736, the heirs of William Penn purchased the title to a vast area west of the Susquehanna River, the first authorized settlements thereon being made by authority of Samuel Blunston, the agent of the Penns, who resided at Wright's Ferry, now Columbia.

When it was learned that "Digges Choice" fell well within the Province of Pennsylvania, Digges applied to the Proprietaries for a warrant to the land, but seems not to have succeeded in his application. In 1745 he obtained a warrant of resurvey from Maryland, and then the long dispute for title began. Digges caused Nicholas Forney and Martin Ullery, settlers, under warrants given by the Penns, to be arrested, April 25, 1746; the sheriff drew his sword and Forney's party drew theirs, whereupon the sheriff and Digges fled.

In February, 1747, a posse from Maryland carried Forney to the jail in Baltimore. This raised the question of jurisdiction. Forney was later shot by an Indian, but recovered, and so the troubles continued to disturb the settlers on

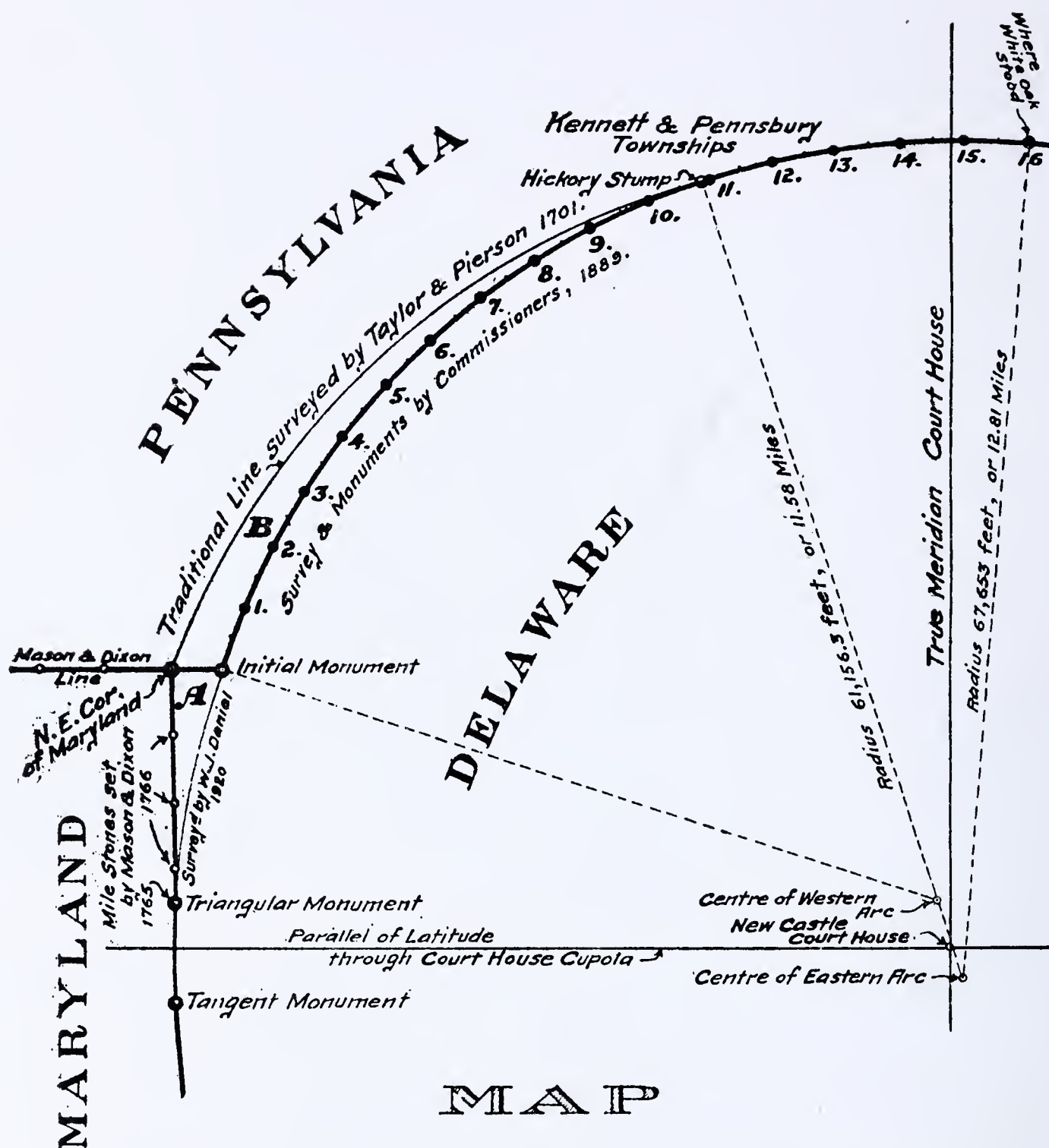
"Digges Choice," without any result, until the killing of Dudley Digges, February 26, 1752. John Digges protested to Maryland authorities that his son had been murdered within the limits of that Province by Martin Kitzmiller and members of his family, and that the trial was set for April 27, at York. The date of the trial was postponed until October, when the question of jurisdiction was settled in favor of Pennsylvania and the Kitzmillers were subsequently acquitted. It appeared from the evidence that the killing of Dudley Digges was an accident occasioned in the struggle for a gun held by Jacob Kitzmiller.

Maryland authorities denounced the act as cruel murder, due to Kitzmiller's artifices to obtain land known to be held by Maryland. The Pennsylvania authorities refused to consider the act cruel murder in advance of a legal trial. But the fight was a legal one to determine jurisdiction. The attorney general of each Province attended—Tench Francis, for Pennsylvania; Henry Darnell, for Maryland—William Allen, Chief Justice of Pennsylvania; Lawrence Growden and Caleb Cowpland, the two associates, assisted. The Secretary of the Province, Richard Peters, also attended as a witness. Immediately on his return to Philadelphia, Mr. Peters wrote to the Penns, in England, a full account of this noted trial.

The shooting of Dudley Digges was one of the lamentable incidents in the settlement of the southeastern border lands of the Province. It served not only to excite animosity among the settlers under Penn and Lord Baltimore, but also between the two governments which then represented those two interests. The Digges were Irish from Maryland and the Kitzmillers were Germans and naturalized citizens of the Province of Pennsylvania.

As has already been stated the commissioners who had been appointed by both governments did nothing but wrangle for the eighteen months allowed in the agreement and Baltimore believed this made it of no effect, but the Penn family won in court and the conduct of Baltimore was censured. Frederick, the sixth Lord Baltimore, declined to be bound by any act of his predecessors, and again many years were wasted.

In 1760 a new agreement was made which was practically identical with the one of 1732. Commissioners on the part of Pennsylvania were Governor James Hamilton, Richard Peters, Reverend John Ewing, William Allen, William Coleman, Thomas Willing, Benjamin Chew, and Edward Shippen, Jr., a selection which assured good and faithful performance. The first three years were spent by the surveyors employed in marking the lines of Delaware. The circle around New Castle was drawn by David Rittenhouse, and added much to his reputation. This circle had a radius of twelve miles, and a tangent was drawn from the middle point of the peninsula to this circle, and a parallel of latitude, fifteen miles south of South Street in Philadelphia, was drawn due west from this. This placed the line where everybody, but the Baltimores, thought it should be, just where it is today. The surveys began in 1761 under John Lukens, John F. A. Priggs, Architect McClean and five brothers, Archibald Emory, Jonathan Hall, John Watson, John Stapler,



SHOWING the portions of land lying between the Eastern line of Maryland as surveyed and monumented by Mason & Dixon in 1766; the Southern line of Pennsylvania, extended from the North Eastern corner of Maryland to the initial monument of the circular boundary as fixed by the Commission of 1889; and the circular boundary of Delaware, extended from the initial monument to the triangular monument, as run by Warren J. Daniel, Surveyor of the Department of Internal Affairs, under direction of James F. Woodward, Secretary, in 1920 (marked **A**) and the land bounded by the traditional circular boundary line surveyed in 1701 by Isaac Taylor and Thomas Pierson; and the circular line as surveyed and marked by the Commission of 1889; and the Southern line of Pennsylvania, extended (marked **B**).

Thomas Garnett, and William Shankland. David Rittenhouse had also been employed by the Penns to make some calculation.

Mason and Dixon Line—This work proceeded too slowly and on August 4, 1763, Thomas and Richard Penn, and Frederick, Lord Baltimore then being together in London agreed with Charles Mason and Jeremiah Dixon, two well known English astronomers, "to mark, run out, settle, fix, and determine all such parts of the circle, marks, lines, and boundaries, as were mentioned in the several articles or commissions, and were not yet completed."

Mason and Dixon arrived in Philadelphia, November 15, 1763, and forthwith engaged in work. They began their survey by ascertaining the latitude of the southernmost part of the city of Philadelphia, which they agreed was the north wall of the house then occupied by Thomas Plumstead and Joseph Huddle, on the south side of Cedar Street. They determined it was $39^{\circ} 56' 37.4''$. This was ascertained December 30, 1763, and the actual survey of the boundary line properly began on this date. They built an observatory from which to determine its latitude, the first structure of the kind for scientific purposes ever built in America.

In 1845, when the northeast corner stone of Maryland could not be found, as it had been undermined by a freshet, and was then taken and built into the chimney of a neighboring farmhouse, the Legislatures of Maryland, Pennsylvania, and Delaware appointed a joint commission, who employed Colonel Graham, of the United States Topographical Engineers, to review Mason and Dixon's work so far as was requisite in order to restore the displaced corner.

During January and February, 1764, they measured thirty-one miles westward of the city to the forks of the Brandywine, where they planted a rose quartz stone, six miles west of the meridian of the courthouse in West Chester. With this stone as a fixed point they determined the point from which they should start to run the horizontal line of five degrees longitude to fix the southern boundary. This was, of course, the northeast corner of the State of Maryland. They cleared a space twenty-four feet wide in the forests and surveyed the line in the middle of it. From this point they extended the line 230 miles, eighteen chains and twenty-one links, or 244 miles, thirty-eight chains and thirty-six links from the Delaware River. This was done during 1766 and 1767.

The Indians could not understand the object of an exploring expedition that spent every clear night gazing at the stars through big guns, and they soon stopped their progress. The Penns used their influence with the Indians and the work proceeded. The western extremity of Maryland was reached and passed, and the astronomers were encamped on the banks of the Monongahela, when the Indians again interposed. Their attitude was so threatening that many of the servants and workmen of the expedition deserted. However the great delight and satisfaction of running an astronomical line through primeval forests raised Mason and Dixon above all fears, and they pressed on to the Warrior Branch of the great Catawba

Indian trail. This was on the borders of a stream called Dunkard Creek, about the middle point on the southern boundary line of the present Greene County. Here the Indians, under King Hendrick, took such a menacing stand that Mason and Dixon were obliged to return, and their Dunkard Creek trail, or Warrior trail, remained the terminus of their line for many years.

The interference of the Indians having arrested further work, Messrs. Mason and Dixon returned to Philadelphia, where they reported to the commissioner, and on December 26, 1767, received an honorable discharge. There were many minor disturbances occasioned by this line, and the actions of the rough border population were slow to become satisfied. A surveyor's transit or astronomy was not enough to determine the limits of their civil pride. These people had grown accustomed to the temporary lines which had been run about 1740, which was about one-quarter of a mile above the true one, and they became as much excited over that narrow strip as they had been when they hoped to penetrate miles into Pennsylvania.

The government of Pennsylvania determined to acquire its rightful jurisdiction and in 1774 a proclamation was issued, which has generally been considered the final act in the boundary controversy. The residue of the southern boundary, a little less than twenty-two miles, was run in 1782 by Robert Andrews, Andrew Ellicott, John Ewing, David Rittenhouse, and John Hutchins, and completed and permanently marked in 1784.

On May 13, 1899, the General Assembly approved an act for the "examination, repair, and resetting of the boundary line monuments along the Mason and Dixon Line." Maryland assisted and the work was completed as set forth in the report of the commission dated January 25, 1907:

This Mason and Dixon's line was a great achievement in that day and a new thing in science. These two modest but skillful men had made themselves immortal. Their line was not marked by river, creek or even mountain range—it was an imaginary one. At every fifth mile a stone was set up, marked on the northern side with the arms of the Penns and on the southern side with the arms of Baltimore; each intermediate mile was marked with stones having P. on the one side and M. on the opposite side. This line, fixed after nearly a hundred years of conflict, is more unalterable than if nature had originally made it. It became the boundary line between the great sides of the slavery question and divided the armies of the North and South in the great Civil War.

Dispute With Virginia—The charter of 1607 granted to the London Company all the territory in America lying between the thirty-fourth and thirty-eighth degrees of north latitude. In 1609 the charter was amended and enlarged, so that it comprised a region stretching two hundred miles north and the same distance south of Point Comfort, and extending "up into the land throughout, from sea to sea, west and northwest." In 1623 the London Company was dissolved, and their territory, except where grants had been made to private individuals, reverted to the

Crown. Instead of narrowing, this apparently increased her limits, and in becoming a royal province without any definite boundaries, she considered herself as a keeper or trustee for the King of all contiguous territory not lawfully granted to any other colony.

The Virginians acquiesced in the Maryland grant; and Penn's grant was respected; but any other territory within the limits of their charter they continued to claim, notwithstanding the action of the King's Bench. When the charter for Pennsylvania was granted in 1681, the government of the Province was committed to the proprietary, with all the powers of legislation and government, save that of making war. This gave them indirect control over the settlers thereon, and enabled them to enforce their peculiar Christian, peaceful, and just policy towards the Indian nations. This unyielding deference to aboriginal title by the Penns became ingrafted into the character of the Province. It was not, however, a characteristic of its neighbor, Virginia, who employed it only when the King commanded or self-interest demanded it. This policy led to unhappy border controversy.

As early as 1751, as related by George Croghan and Andrew Montour, at a council of the Six Nations and Delaware and Shawnee nations, at Logstown, a Dunkard from Virginia came to that town and requested to settle on the Youghiogheny River; he was told that he must apply to the Onondaga Council, and be recommended by the Governor of Pennsylvania. This little item of history reflects the peculiar non-intrusive Indian policy of the Penns, and, except that of the Ohio Company, which did not recognize Pennsylvania proprietorship, is the earliest recorded design of effecting an orderly settlement in the southwestern section of our State. This proposed settlement failed. Doubtless the applicant was one of the Eckerlin brothers, who located a few years later in present Greene County, and whose later history is as tragical as their life was peaceful and holy.

The Ohio Company, in 1749, received a grant of half a million acres on the branches of the Ohio. These Virginia members held that this was part of the Dominion, and as they desired to form a barrier against the French, they also desired to establish trade with the Indians. Under its auspices Christopher Gist explored the country and with eleven other families, he settled within the present limits of Fayette County. It was to vindicate their claim to the region about the forks of the Ohio that the youthful Major George Washington was sent to the French posts in 1753. The authorities of Pennsylvania, however, now began to contend that the claims of Virginia overlapped the charter granted to William Penn, and some correspondence took place between Governor Dinwiddie, of Virginia, and Governor Hamilton, of Pennsylvania, in the years 1752 and 1753.

Governor Hamilton made a careful investigation concerning the situation at Fort Duquesne, and Richard Peters, in an important letter to the Governor, says: "Upon the whole it is very clear that the Western Bounds of the Province extend thirty-five miles beyond Log's Town, and the Weningo (Venango) and the Riviere aux Boeufs, where the forts are built, being to the East of Log's Town, are conse-

quently so much more within the Province." Settlers soon poured into this section of Pennsylvania, and it became the scene of the first armed conflict in the French and Indian War, when young Washington was repulsed at the Fort Necessity, July 4, 1754. The expedition of Colonel James Burd, in 1759, opened the road to Redstone, where Fort Burd was erected and settlements made.

Although the French were expelled from this region in 1758, yet the Indians were not quieted until after Pontiac's War. Soon as this terror was removed there was a steady influx of settlers from the frontier counties of Virginia and Maryland. These first settlers assumed this to be Virginia territory, although it was embraced within Cumberland County. This increasing contact and intercourse of pioneer settlers with the Indians led to many disorders, in which the governments of Virginia and Pennsylvania made efforts to punish the offenders.

The running of Mason and Dixon's line, in 1767, proved that these new settlements were all within Pennsylvania. In January, 1768, Governor Penn called the special attention of the Assembly to this newly acquired jurisdiction, and invoked their aid in removing settlers who claimed the territory as a part of Virginia. The Assembly was as badly frightened as the Governor, yet they enacted a most terrifying law to drive off the intruders. This law, dated February 3, 1768, savors more of the fourteenth than of the eighteenth century. It was too brutal to be effective and only resulted in increasing the irritations between the settlers and the Indians. The death penalty, without the benefit of clergy, was to be invoked for trespassing upon lands not purchased from the Indians.

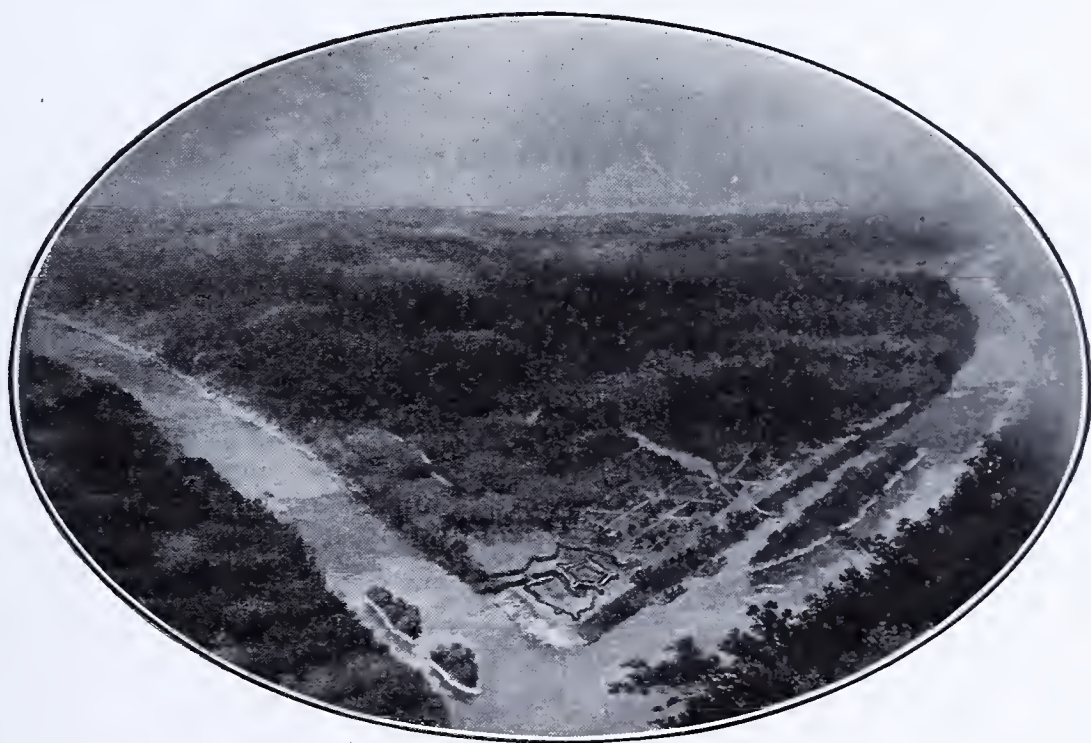
Governor Penn commissioned Reverend John Steel, of Carlisle, John Allison, Christopher Lewis, and James Potter to visit the obnoxious settlements, distribute proclamations embodying the bloody act, and warn the settlers to remove. These envoys set out on their errand, and arrived at Redstone on March 23, where meetings were held with the settlers in several places. Many promised to move off, but others refused to obey the law.

While these meetings were in progress the Indians held a council at Redstone which greatly obstructed the mission of the commissioners, and brought to an abrupt termination all efforts to enforce the non-intrusion law. This controversy was finally settled so far as the Indians were concerned at the great council of the Six Nations at Fort Stanwix, November 5, 1768, when a deed was made and signed by a representative from each tribe of the Six Nations, fixing and describing the boundary line and granting the land east of it to the King of England. The actual sum paid for this vast territory was about \$50,600.

From a point on the Allegheny River several miles above Pittsburgh, this historic line of property ran in a northeasterly direction to the head of Towanda Creek, proceeding down the stream to the Susquehanna; thence it went northward along the river to Tioga Point, eastward to Owego, and crossed the country to the Delaware, reaching it at a point a few miles below Hancock; from here it went up the Delaware to what is now Deposit, Broome County, New York; thence directly

across the hills to the Unadilla, and up that stream "to the west branch, to the head thereof." The Fort Stanwix Treaty Lines through Pennsylvania included all or part of the present counties of Pike, Wayne, Susquehanna, Lackawanna, Luzerne, Bradford, Sullivan, Wyoming, Montour, Northumberland, Lycoming, Union, Clinton, Centre, Clearfield, Cambria, Indiana, Armstrong, Allegheny, Westmoreland, Somerset, Fayette, Greene, Washington, and Beaver. The treaty opened the country around the Ohio for legitimate settlement. A land office was opened and a rapid increase of population followed. New difficulties arose when the Pennsylvania Government erected new counties and extended jurisdiction over this region.

Penn's Manor of Pittsburgh, too, was surveyed for the Proprietaries early in 1769, and in the beginning of 1771 magistrates were appointed by Pennsylvania and for some time discharged the duties of their offices without having their authority questioned. The growth of Pittsburgh was slow. England, after the French and Indian War, had forbidden colonists to settle west of the headwaters of the rivers in the Atlantic basin, and the settlers on Redstone Creek and the Cheat River were



Pittsburgh in 1760

at one time driven off by the same British proclamation. But the continued accession of emigrants into this region made it necessary to erect a new county, and the General Assembly erected Bedford County in 1771, and in 1773 established Westmoreland County, which included all of the southwestern portion of the Province west of Laurel Hill. Robert Hanna's settlement, on the old Forbes Road, near the present site of Greensburg, was made the county seat and named Hannastown. The first court in the Western Pennsylvania country was held here April 6, 1773. William Crawford, the presiding judge, had long been a justice of the peace, residing on the Youghiogheny River, opposite the present site of Connellsville. A jail was ordered to be built, which was constructed of logs, and all prisoners, regardless of race, color, or condition, were confined together.

When Virginia saw that Pennsylvania was extending jurisdiction over the forks of the Ohio she renewed her claims to that country. John Murray, fourth Earl of Dunmore, Governor of New York in 1770-71, and then of the Dominion of Virginia, was one of the land grabbers of American history. While serving as Governor of New York he acquired a tract of 50,000 acres of land, and himself acting as chancellor, was, according to Bancroft, preparing to decide in his own court, in his own favor, a large and unfounded claim to more lands. When he went to Virginia in the summer of 1772 his passion for land seemed to increase. He secured two large tracts from the Indians, and in the name of Virginia, attempted to extend his jurisdiction over the western part of Pennsylvania, including Pittsburgh, without even a notification of his intentions to the Proprietaries of Pennsylvania. Dunmore asserted that Pittsburgh was outside the limits of Pennsylvania. In this contention he was supported by Colonel George Croghan and many others, who believed that the five degrees of longitude which were to be the extent westward of Pennsylvania placed the Monongahela beyond the limits of that Province. Croghan maintained that the limits were at the Alleghenies or Laurel Hill range, "having heard, among other things, that a degree of longitude at the time of the charter of William Penn meant forty-eight miles."

While Lord Dunmore was in Pittsburgh he met Dr. John Connolly, a native of Lancaster County, but one of the unprincipled land grabbers and political intriguers of that day, who was a man after Dunmore's own heart, and he was easily persuaded to become his pliant tool, and the leader of a movement for sustaining the claims of Virginia, and forming a combination of the Western Indians against the Pennsylvanians. It is believed that Connolly was a nephew of George Croghan. This relationship and his intimacy with William Crawford and other men of importance gave him a good standing at the Forks of the Ohio. He was given a commission as a colonel by Lord Dunmore when he, at the head of two companies, departed from Williamsburg for the Ohio country. They were stopped at Hagerstown as suspicious persons, and an examination of their papers revealed the nefarious plot. Connolly had been directed to raise a regiment to be rendezvoused at Detroit, where hostilities against the white settlers might be more easily fomented among the Indians. Thence he was to march in the spring, pass through Pennsylvania, adding to his force at Fort Pitt, enter Virginia with his motley army, and meet Dunmore at Alexandria, who would be there with a military and naval force.

Connolly arrived in Pittsburgh late in December, and on January 1, 1774, he posted a printed notice which gave the information of his appointment as "Captain, Commandant of the Militia and its Dependencies," and that he purposed moving to the House of Burgesses of Virginia the necessity of erecting a new county to include Pittsburgh, "for the redress of your Complaints, and to take every other step that may tend to afford you that Justice for which you Solicit." He then proceeded immediately to take possession of Fort Pitt, which he renamed "Fort Dunmore." He issued a call to the people to assemble as a militia, then he confiscated

private property and treated all who opposed his action with great insolence and severity.

On January 11, Aeneas Mackey, one of the Pennsylvania justices, advised Arthur St. Clair that the "Captain had already appointed six or seven Magistrates, among them are Major Smallman, John Campbell, and John Gibson; the rest I have not heard their Names yet." St. Clair advised the Provincial authorities, and Governor Penn replied that he had dispatched a messenger to Lord Dunmore asking for "an explanation of this strange affair." The Governor directed St. Clair to assert the right of Pennsylvania and protect the people, as Fort Pitt most certainly is in Pennsylvania.

While a large part of the inhabitants of that region were Virginians by birth and predilection, there were some fearless and loyal Pennsylvanian adherents who did all in their power to resist Connolly's high-handed proceedings. One of these was Arthur St. Clair (afterward General St. Clair), then prothonotary of the new county of Westmoreland. After receiving Governor Penn's letter, St. Clair issued a warrant against Connolly, January 24, and had him committed to jail at Hannastown, from which he was soon released on giving bail for court appearance there.

Connolly, however, went to Virginia, was sworn in as a justice of the peace for Augusta County, and when court met at Hannastown, he appeared with his militia, armed and with colors flying, and refused to admit the Pennsylvania magistrates. The magistrates returned to Pittsburgh, where on April 9, Connolly arrested Justices Aeneas Mackey, Devereux Smith, and Andrew McFarlane and sent them prisoners to Staunton, Virginia.

Governor Penn advised the three magistrates to get bail, but they had been released by Dunmore. He also sent Andrew Allen, Attorney General of Pennsylvania, and James Tilghman as commissioners to induce Lord Dunmore to join with the Proprietaries in a petition to the King to have the boundary line run and marked, and in the meantime to agree to a temporary line of jurisdiction, suggesting that the Monongahela River would answer for a line. The application to the King was consented to, but the boundary was not agreed upon.

Dunmore's War—The adherents of Virginia increased in strength at Pittsburgh, and it became impossible to collect taxes imposed by Pennsylvania. How these troubles would have ended is unforeseen, for during the latter part of 1774, the attention of all the western frontier was turned to the Indian invasion, since known as Dunmore's War. While this war was confined to the western border of Virginia, the inhabitants of Westmoreland County organized, under command of St. Clair, assisted by Colonels John Proctor and Archibald Lochrey and Captain James Smith, and put the frontier in a state of defense.

In the spring of the year 1774, at a time when the Indians seemed to be quiet and tranquil, a party of Dunmore's Virginians attacked the Mingo settlement, on the Ohio River, and slaughtered the entire population, even the women with their children in their arms, and members of the great Chief Logan's family were among

the slain. This tragic event occurred on May 24, 1774, and according to the common belief at the time was perpetrated by Captain Michael Cresap and a party who deliberately set out to kill every Indian they met, without regard to age or sex. The first person to state that Logan's family was murdered by Cresap was no other than Thomas Jefferson, in his "Notes in Virginia." The main authority for the vindication of Michael Cresap's memory is the extremely rare little volume, Jacob's "Life of Cresap," published in 1826. Jacob sets up an alibi for Cresap, but the present writer accepts the popular story that the wanton murder was perpetrated under the direction of Cresap.

Tahgahjute was the second son of Shikellamy, the great vicegerent of the Six Nations. He was born at Shamokin, about 1725, and was given his Christian name Logan in honor of James Logan, Secretary of the Province, who was a devoted friend of the great Shikellamy. Very little is known of the early life of Logan, but he worked his way West by degrees. He was for a time on the Juniata, where several places still bear his name, but his final home was near the mouth of the Yellow Creek, thirty miles above Wheeling. Reverend John Heckewelder, the noted Moravian missionary among the Indians, while passing down the Ohio, in April, 1773, stopped at Logan's settlement and in his interesting journal notes that "I received every civility I could expect from such of the family as were at home."

Cresap was on the Ohio, below Wheeling, engaged in making a settlement. Some pioneers resolved to attack an Indian town near the mouth of the Sciota, and solicited Cresap to command the expedition. They attacked two canoes filled with Indians, chased them fifteen miles down the river, where a skirmish ensued, and the Indians who were not killed were taken. On the return of this party they planned an expedition against the settlement of Logan. Cresap and his party proceeded to a point near the settlement and encamped on the bank, when some Indians passed them peaceably and encamped at the mouth of Grave Creek, a little below. Cresap attacked and killed the party. One of Cresap's men fell in this action. Among the slain of the Indians were some of Logan's family. Smith, one of the murderers, boasted of this fact in the presence of Logan's friends.

This party then proceeded to Baker's Bottom, opposite the mouth of Yellow Creek, when Greathouse, a spy, crossed over and approached the Indian camp as a friend and counted them. He reported their number too large to attack and was then warned by an Indian woman to leave, as the Indians had learned of Cresap's murder of their relatives at Grave Creek and were angry and that they were drinking. He returned to Baker's, collected a large enough force, all got drunk, and then in that condition they fell upon and massacred the whole Indian camp except a girl, whom they kept as a prisoner. Among the slain was the woman who had warned him of his danger. A sister of Logan was inhumanly and indecently butchered in this attack.

This commenced the war of which Logan's war club was the chief factor. The first family murdered by him was the warning of what might be expected. Logan

left a note in the house of the murdered family, and true to his threat, great numbers of innocent men, women, and children fell victims to the tomahawk and scalping knife until the decisive battle at Point Pleasant October 10, 1774. When Lord Dunmore finally conquered the Indians and the treaty was held, Cornstalk was the principal speaker. He laid much stress for the cause of the war on the murder of Logan's family. Logan disdained to meet with the white men in council and sat sullenly in his cabin while the treaty was in progress. Dunmore sent Captain (afterward Major General) John Gibson to invite him to the council.

The old Mingo chief took Gibson into the woods and, sitting down upon a mossy root, told him the story of the wrongs done to him and, as Gibson related, shedding many bitter tears. He refused to go to the council, but, unwilling to disturb the deliberations by seeming opposition, he sent a speech by the hand of Gibson to Governor Dunmore, which has been preserved and greatly admired for its pathetic eloquence. The speech was as follows:

I appeal to any white man to say, if ever he entered Logan's cabin hungry, and he gave him not meat; if ever he came cold and naked, and he clothed him not. During the course of the last long and bloody war, Logan remained idle in his cabin, an advocate of peace. Such was my love for the white, that my countrymen pointed as they passed and said, "Logan is the friend of the white man." I had ever thought to have lived with you, but for the injuries of one man, Colonel Cresap, the last spring, in cold blood, and unprovoked, murdered all the relations of Logan, not even sparing my women and children. There runs not a drop of my veins of any living creature. This called on me for revenge. I have sought it. I have killed many; I have fully glutted my vengeance. For my country, I rejoice at the beams of peace. But do not harbor a thought that mine is the joy of fear. Logan never felt fear. He will not turn on his heel to save his life. Who is there to mourn for Logan? Not one.

Lossing, in his "Field-Book of the Revolution," says:

Logan, whose majestic person and mental accomplishments were the theme of favorable remark, became a victim of intemperance. Earlier than the time when Dunmore called him to council, he was addicted to the habit. The last three years of his life were very melancholy. Notwithstanding the miseries he had suffered at the hands of the white men, his benevolences made him the prisoner's friend, until intemperance blunted his sensibilities, and in 1780 we find him among the marauders at Ruddell's Station.

The manner of his death is differently related. The patient researches of Mr. Mayer lead the writer to adopt his as the correct one, as it was from the lips of an aged Mohawk whom he saw at Caghnawaga, twelve miles from Montreal, in the summer of 1848. His mother was a Shawnee woman, and when he was a boy he often saw Logan. Mayer says: "In a drunken frenzy near Detroit, in 1780, Logan struck his wife to the ground. Believing her dead, he fled to the wilderness. Between Detroit and Sandusky he was overtaken by a troop of Indian men, women, and children. Not yet sober, he imagined that the penalty of his crime was about to be inflicted by a relative. Being well armed, he declared that the whole party

should be destroyed. In defense, his nephew, Todkahdohs, killed him on the spot by a shot from his gun. His wife recovered from his blow." Chief Logan died November 28, 1780.

The cold-blooded murder of the family of Chief Logan and many other atrocities, had caused fearful retaliations on the part of the red skins. While Pennsylvanians and the agents of the Six Nations were making efforts for peace, Governor Dunmore, bent on war, called for volunteers, and his army destroyed the Shawnee town on the Muskingum, August 7, 1774. It was while on his way down the Ohio to join his army that Dunmore issued a proclamation concerning Virginia's jurisdiction to the region west of the Laurel Mountains in Pennsylvania. Upon his return he again reiterated the claims of Virginia, but these proclamations were met with counter proclamations of Governor John Penn, in which was asserted that this territory belonged to Pennsylvania.

The ravages caused by Dunmore's War and the settlers in this territory during the boundary dispute with Virginia nearly ruined the Indian trade of Western Pennsylvania, of which Fort Pitt was the trading center. This condition became so disastrous to the one industry upon which the inhabitants depended that nearly all the Pennsylvanians were in favor of deserting their settlements. They were anxious to have a fort and town at another place, preferring Kittanning, or Frankstown, or even a site on the Susquehanna. Governor Penn determined to erect a trading post at Kittanning, and ordered Arthur St. Clair to lay out a town at that point, which was directed to be done at once. St. Clair sent two men, named Speare and Butler, in August, 1774, to carry out this order.

On December 12, following, Lord Dunmore adjourned the court of Augusta County, Virginia, to meet at Fort Dunmore on December 20, accompanied with a new commission of the peace. The new district was called the District of West Augusta.

The Virginians held their first court in Fort Dunmore on February 21, 1775, with George Croghan, John Campbell, Dr. John Connolly, Thomas Smallman, Dorsey Pentecost, John Gibson, George Vallandigham and William Goe as justices. George Croghan, who had formerly been a Pennsylvania justice, was made President Judge of this Virginia court.

During the few years that court was held at Pittsburgh, under Virginia authority, the usual modes of punishment of the period were inflicted on the guilty, according to the offense against the law. Some were fined, some whipped, some confined in the pillory or stocks; others had their ears cropped or were branded; murderers were hanged; scolds and minor offenders were ducked in the river at the Point by means of a ducking stool erected when Virginia established the court there. By order of a Virginia magistrate, a man named Benjamin Harrison, with an armed party, broke open the jail at Hannastown, February 7, 1775, and set free the prisoners. Robert Hanna, who was a magistrate, read the riot act to them, but Harrison said he did not regard that act, or those who read it, or those who made it.

Two weeks later, Hanna and another magistrate, James Cavett, were arrested and confined in Fort Dunmore, where they remained for months. The controversy got in Congress, which was engrossed in the events of the Revolution.

The Pennsylvania government had already established a Provincial Court at Hannastown, near present Greensburg, consequently this same territory now contained two courts, barely thirty miles apart, and the result can easily be imagined. Arthur St. Clair wrote to Joseph Shippen, dated Ligonier, May 18, 1775, in which he says: "We have an account that Lord Dunmore has been obliged to abandon his Government—tis the only Piece of good News has reached Us since the Disputes with Great Britain took so serious a Turn, but I doubt the Truth of it. The Pittsburgh Court is now sitting, whether they do Business or not, I have not heard." St. Clair later advised Joseph Shippen that while Connolly was at his house endeavoring to procure bail, and while in his cups talked too freely. He revealed a plot to have the Crown confirm a great region to the Indians, part of which was in Pennsylvania, and that Dunmore was to support the plan with all his interest.

The Tory conduct of Connolly at Pittsburgh became so bold and obnoxious that early in June, 1775, he was seized by twenty men, under orders of Captain St. Clair, and carried to Ligonier, with the intention of delivering him to the Continental Government as a prisoner in Philadelphia. He was released, however, and fled from Pittsburgh by night and made his way to Portsmouth, Virginia, where he joined Lord Dunmore on a man-of-war, taking refuge in Canada. Virginia had revolted from Dunmore's tyranny at home, but showed no disposition to repudiate his aggressions in Pennsylvania nor the machinations of Connolly.

The boundary dispute was maintained, although in view of the troubles with the Mother Country, the Virginia and Pennsylvania delegates in Congress, including such men as Thomas Jefferson, Patrick Henry and Benjamin Franklin, united in a circular urging the people in the disturbed region to mutual forbearance. This action of Congress and the constant fear of an Indian uprising persuaded the Virginia Provincial Convention, in session at Williamsburg, July 17, 1775, to pass a resolution which sent Captain John Neville with one hundred men from the Shenandoah Valley to take possession of Fort Pitt. The following year the Virginia counties in the disputed territory were organized with their loyal and administrative machinery, but the rancor of the contest had, however, somewhat diminished and there were no such acts of violence committed as during the régime of Connolly and his master. Captain John Neville continued to command until the Continental Congress determined to take Fort Pitt under its care and provide a garrison at the Continental expense. The offer was accepted by Virginia and General Washington selected Brigadier General Edward Hand to relieve Captain Neville of his command.

Prior to 1776, Virginia erected the District of West Augusta, covering the territory in Pennsylvania west of the Laurel Hills, and south of the Ohio and Allegheny rivers, and in October, 1776, divided it into three counties called Mononga-

hela, Yohogania, and Ohio. The courts of Monongahela were held at Theophilus Phillip's home, two miles above present New Geneva, Fayette County; those of Yohogania were held at Andrew Heath's, near present West Elizabeth, Allegheny County; while those of Ohio County were in what is now West Liberty, West Virginia. A temporary boundary was proposed by the Board of Trade, but the proposal was not acceptable to the Penns. The matter was postponed, and the Revolutionary War put an end to further negotiations in England. In the meantime matters remained in a chaotic condition, especially as to inhabitants in Westmoreland County. Governor Penn could not save the situation, nor could the law furnish any protection.

In December, 1776, the Legislature of Virginia proposed a line of demarcation which was slightly different from those already suggested. Pennsylvania could not accept it, but in the meantime matters remained in a chaotic condition, especially as concerned the Westmoreland inhabitants. The time came, however, when it was necessary to do something. Finally George Bryan, Reverend John Ewing, and David Rittenhouse, on the part of Pennsylvania, and Dr. James Madison and Robert Andrews, on the part of Virginia, met as commissioners at Baltimore, August 31, 1779, and after thorough consideration of the subject agreed: "To extend Mason and Dixon's line due west five degrees of longitude, to be computed from the river Delaware, for the southern boundary of Pennsylvania, and that a meridian, drawn from the western extremity thereof to the northern limit of said state, be the western boundary of said state forever."

This agreement was ratified by the Assembly of Pennsylvania on November 19, 1779, but a similar action was not taken by Virginia until June 23, 1780. In 1782 commissioners appointed by the two States ran the lines, but these were only temporary. In 1783, David Rittenhouse, John Lukens, Reverend John Ewing, and Captain Thomas Hutchins, on the part of Pennsylvania, and Dr. James Madison, Andrew Ellicott, Robert Andrews, and John Page, on the part of Virginia, again ran the lines, and set up stone pillars at regular intervals. In 1785, David Rittenhouse and Andrew Porter, acting for Pennsylvania, and Andrew Ellicott and Joseph Neville for Virginia, surveyed the line to the Ohio River. Ceding her western lands, north of the Ohio, to Congress in 1784, Virginia had no further interest in the boundary and the next year Pennsylvania alone extended the meridian to Lake Erie, the survey being made by Andrew Porter and Alexander McClain, and the dispute was finally settled, as after the Revolution affairs in Western Pennsylvania were generally peaceful.

Following the civil strife occasioned by the boundary disputes with Virginia and the political intrigues of Dr. John Connolly, an agreement was ratified and confirmed by the legislatures of Virginia and Pennsylvania which defined the boundaries and ended further dispute between the two Commonwealths, but, unfortunately, this did not end the trouble as far as the inhabitants of this territory were concerned. An agitation developed which has since been known as "the new State

project." It aimed to have the Continental Congress form a new State in that part of Pennsylvania, to be called "Westsylvania." The story is told in another chapter.

In 1781 Washington County was erected; Fayette in 1783; and in 1788 Allegheny was carved out of a part of Westmoreland and Washington; Greene County was erected from Washington, February 9, 1796.

The western boundary of Pennsylvania was resurveyed when the legislatures of Ohio and Pennsylvania, in May, 1878, appointed commissions for this purpose. These were: Joseph M. Rickey, James Mackey, and H. B. Perkins for Ohio, and James Warrall, James McCullough, and William W. Walton for Pennsylvania.

Northern Boundary—The northern boundary of Pennsylvania was fixed by the Royal Charter at the beginning of the 43° of north latitude; but the location of the parallel led to some differences of opinion between the Proprietaries of Pennsylvania and the several governors of New York, both parties setting up claims for the same lands, and the Board of Trade paid no attention to requests for a settlement by the Penns.

In 1785 commissioners were appointed on the part of Pennsylvania and New York to ascertain the northern boundary of the former from the Delaware River westward to the northwest corner. The commissioners were David Rittenhouse on the part of Pennsylvania, and Samuel Holland on the part of New York. They proceeded to act in pursuance of that appointment, and in December, 1786, ascertained and fixed the beginning of the 43° of north latitude, erected suitable monuments there and near Delaware River, but were prevented by inclement weather from proceeding further in the survey. The next year Andrew Ellicott was appointed a commissioner on the part of Pennsylvania, and James Clinton and Simeon Dewitt on the part of New York. In 1787 they completed the running and marking of this northern boundary 259 miles and 88 perches from its commencement at the Delaware River to its termination in Lake Erie, five or six miles east of the Ohio State line and marked the whole distance throughout by milestones, each one indicating the distance from the Delaware River. In 1789 an act of Assembly confirmed the acts of the commissioners.

General William Irvine discovered, while surveying the Donation Lands, that Pennsylvania had but a few miles of lake coast and not any harbor, and in consequence of his representations the authorities of Pennsylvania made propositions for its purchase from Philips and Gorham, the reputed owners, in the year 1788. Surveyor General Andrew Ellicott surveyed and established lines at the request of the Federal Government, but Frederic Saxton accompanied him on behalf of the owners. It was finally determined by comparison with the charters of New York, Massachusetts and Connecticut just what was the western limit of New York. This was found to be twenty miles east of Presque Isle.

Erie Triangle—The Indians being recognized as owners of the soil, the whole was purchased from them by different treaties. One at Fort Stanwix extinguished their title to the lands of Western Pennsylvania and New York, excepting

the Triangle or Presque Isle lands, which were accidentally left out of Pennsylvania, New York, Massachusetts, Connecticut, and Virginia, and were supposed at different times to belong to each. New York ceded it to the United States in 1781, and Massachusetts in 1785. On June 6, 1788, the Board of Treasury of the United States was induced to make a contract for the sale of this tract described as bounded



Lake Erie—Erie in the Distance

“on the east by New York, on the south by Pennsylvania and on the north and west by Lake Erie,” to the State of Pennsylvania. On September 4 it was resolved by Congress “that the United States do relinquish and transfer to Pennsylvania all their right, title and claim to the Government and jurisdiction of the said land forever, and it is declared and made known that the laws and public acts of Pennsylvania shall extend over every part of said tract as if the said tract had originally been within the charter bounds of the State.”

By an act of October 2, 1788, the sum of £1,200 was appropriated to purchase the Indian title to the tract, in fulfillment of the contract to sell it to Pennsylvania. At the treaty of Fort McIntosh, January 9, 1789, Chief Cornplanter and other

chiefs of the Six Nations signed a deed in consideration of the sum of £1,200, ceding the Presque Isle lands to the United States. It was then, by a deed dated March 3, 1792, ceded by the United States to Pennsylvania. This deed is signed by George Washington, President, and Thomas Jefferson, Secretary of State.



Wayne's Blockhouse, at Presque Isle

In 1790 Surveyor General Andrew Ellcott made a survey of the triangle and found it to contain 202,287 acres. The purchase money paid to the United States, at seventy-five cents an acre, was \$151,640.25. This purchase having been completed before the passage of the act of April 3, 1792, the lands within it except the reservation were sold

under the provisions of this act. The first settlements in Erie County were made under the provisions of that law, and many instances of personal violence occurred between the contending claimants. The squatters would league together to prevent the legal claimants from depriving them of their improvements.

The settlement of the lands northwest of the Allegheny River, and especially the Presque Isle lands, was never cordially acquiesced in by the Six Nations, and Cornplanter became very unpopular among his own people. It was charged against him that he and Little Billy had received the purchase price both at Fort McIntosh and Philadelphia. Cornplanter himself protested to the United States at Buffalo Creek in June, 1794, against the garrison established by General Anthony Wayne at Presque Isle, when he went out against the Miami Indians.

Eastern Boundary—The eastern boundary of Pennsylvania has never been in dispute, as the Delaware River was named in the charter, but the northern point of this line which also forms the boundary of New York and New Jersey is quite interesting. The boundary line between New York and New Jersey was for many decades the subject of serious dispute and perpetual warfare among the borderers. On one occasion Major Swartout's house was attacked by Jersey claimants and he was driven from his home, but volunteers from Goshen reinforced his little band and drove the invaders back to New Jersey. On another occasion the major was captured as he departed from church and he was confined in a New Jersey jail for some days.

Not long subsequent to this event the boundary line was definitely established by officers of the United States Coast Survey, and indicated, until 1822, by a large copper bolt securely set in the rock jutting out into the confluent waters of the Neversink and Delaware rivers. Later a granite monument was set up at this place to make the dividing point of the three States. The promontory is known as "Tri-States Rock," and is easily reached from Matamoras, by a walk through a silent avenue in the beautiful cemetery of Laurel Grove, which lies between the two rivers as they gradually converge into a single stream. This part of Pike County is historical; it is also picturesque in its scenery. Just beyond the point where the Neversink empties into the Delaware the stream turns abruptly in a southerly direction and flows onward between Pennsylvania and New Jersey to the sea. The boundary between New Jersey and Pennsylvania was confirmed by an act of September 20, 1783.

Sydney George Fisher, in his "The Making of Pennsylvania," says:

When we consider all these boundary disputes, including the one with Connecticut, the long years through which they extended, the violence and bitterness with which they were maintained against us, the largeness of their demands, cutting us down from greatness to littleness, and depriving us of our two important cities and points of advantage, it is hard to restrain a feeling, not merely of satisfaction at our success in resisting these attacks, but of gratitude for the skill and persistence of the Penns who accomplished the results. For nearly a century they followed every doubling and turning of the enemy with perfect good temper, perfect fairness, and inexhaustible patience. They never resorted to violence and they never retaliated for injuries. They were always ready to compromise, and yet they were always dignified. They secured the ablest and most astute counsellors, and their arguments were always well prepared and fortified, but always reasonable and never strained the truth or justice. The dignity, the peace, and the honor of the Commonwealth during those eighty years of contest, could hardly have been in better hands.

CHAPTER III.

RELIGION.

Quakers or Friends—The Pennsylvania Quaker was a different type than the solemn New England Puritan or the fox-hunting Virginian. He was formal and stiff like the Puritan, but he had none of his sternness and serenity. He believed in religious tolerance, while the Puritan denied it. He was most liberal in his opinions and far ahead of the Puritan in philanthropy.

In most countries the Quakers were a very retired sect. In England they were made up chiefly from the middle class and the rural population. They were opposed to war, official oaths, and politics, but in Pennsylvania they were the governing body, responsible for the political management of the Province. Instead of avoiding politics, as too exciting for religious contemplation, they were compelled to take a very active part in them.

These religionists called themselves "Friends," or "Children of Light," for they held that all truth came to them through the "inner light," not through men's teachings. God spoke to their hearts, they said, and in this way was their guide. They would tremble or quake when they felt that the inner light had come to them, and for this they were given the name of "Quakers." This title, of course, was given in dérision, but it came to be that by which they were everywhere known. They are still Friends among themselves, but Quakers to the world at large.

The sect was founded in 1648 by George Fox, a shoemaker, who preached throughout England at such times as he was out of prison. Great numbers came to hear him and soon there were thousands of converts to his doctrine.

He preached against fighting, taking of oaths, that no man was better than another, in show and ceremony of any kind, or in paying to support the state religion. His followers would not take off their hats before any man, even before the King, or speak of any man as "you," for they thought this was a sign of pride. With them every man was "thou" or "thee," a more humble mode of address, and hitherto used only to servants and inferiors.

Of all the new religious sects the Quakers were treated the worst. The prisons were crowded with them and hundreds died. When it was found that they could not be suppressed, to get rid of them they were allowed to settle in America. On coming here they opened wide the gates of Pennsylvania, not only to the sects of Europe, but all mankind, without distinction of creed or race, was made welcome.

About the time Massachusetts passed a law against the Quakers in 1656, George Fox, the principal Quaker leader, gave much thought to the possibility of making settlement north of Maryland in the region drained by the Delaware and Susque-

hanna rivers. To the north were the Dutch of New York and the Puritans of New England, and on the south were the Roman Catholics in Maryland and Church of England people in Virginia. Fox commissioned John Coale, a Quaker, to treat with the Indians, but nothing was done in the matter. However, this was the first movement towards a Quaker colony.

When reports of this movement reached the ears of young William Penn at Oxford, it set his imagination aflame, and he never forgot the project. But the dream needed more than mere consent of the Indians.

Two Quakers had bought West Jersey on the Delaware, and William Penn became interested in the Province, but it could not be governed by Quakers, and the land was not the best. Yet Penn's interest in both West and East Jersey proved that there was to be a real Quaker colony.

Former Governor Pennypacker, in his "Pennsylvania, The Keystone," says: "It may be said with truth that the Baptists, who under the lead of Roger Williams settled Rhode Island, and the Quaker followers of Penn were the only American colonists who founded colonies to escape religious oppression, and were sufficiently enlightened to accord to others the religious liberty they claimed for themselves. Around the dome of the Capitol at Harrisburg is written the prophecy of William Penn, 'And my God will make it the seed of a nation.' His inspiration has found fulfilment. When there was written into the Constitution of the United States that 'Congress shall make no law respecting an establishment of religion or prohibiting the free exercise thereof,' and that principle was accepted by the other colonies and embodied in their State Constitutions, they had abandoned their own conceptions of the province of government and were converted to those of Pennsylvania."

The Quakers who came to Pennsylvania were a different set of people who thirty years before went to Massachusetts and Rhode Island. They were less extravagant in their behavior and possessed more wealth and better education. They were the soundest of financiers, profound statesmen, and men of keen business judgment. They soon began the development of the natural resources of their province. Although outnumbered by the Germans and Scotch-Irish, the Quakers controlled the Legislature, and down to the Revolution were the dominant factor in government. Thus this religious sect, outcasts and enemies of law and religion in England, proved in Pennsylvania their capacity of making Penn's "Holy Experiment" an ideal place for good order and material success, as well as a haven for their sect.

The first schism among the Quakers occurred in Pennsylvania in 1692, and was known as the Keith controversy, and it had grave consequences. George Keith, a prominent preacher among the Quakers, began to differ with them about questions of doctrine and to contend that the inner light was not alone sufficient for salvation. He brought about a great division, in which he gathered a number of followers in Pennsylvania and New Jersey. They separated from the sect and set up meeting-

houses of their own, calling themselves Christian Friends, and were called by others Keithian Quakers.

Ministers presented a condemnation of Keith to the monthly meeting. Keith wrote what he called an appeal, and William Bradford, who took sides with him, printed it. Keith, Bradford and others were arrested and tried for publishing a seditious and libellous paper, and Keith was convicted and fined. But Keith soon deserted his followers and joined the Church of England, after which his faction was gradually dispersed.

For more than a hundred years after the Keith controversy there was no schism. But, meanwhile, the Keith party had grown in numbers, and by the year 1827 the large majority of Quakers had adopted the Keith opinions. This majority, or Orthodox Quakers, as they called themselves, insisted on a complete triumph and, in 1827, forced a separation. The Hicksites, as the minority were called, were driven out of the sect.

Since the Hicksite separation there has been another split among the Quakers, which has created the Wilburites, who have taken ground midway between the Hicksites and the Orthodox.

The Quakers have the honor of being one of the few divisions of Christendom against which the charges of inhuman cruelty and selfish love of power cannot be brought. They carried into effect in Pennsylvania the prison reforms which are supposed to have originated elsewhere. They introduced the idea that a prison should be a reformatory as well as a place of punishment—an abode of discipline and cleanliness, instead of a source of dirt, pestilence and disorder.

As early as 1727 they began to agitate for the abolition of slavery, and many years before that date they had the subject under discussion. In 1790 the annual meeting presented a memorial to Congress asking for the discouragement of the slave trade and the traffic in slaves.

Two of their principles have always attracted great attention—their objection to taking an oath, and their objection to taking part in war. There was nothing new in these ideas. It was held by many that oaths were useless ceremonies, because men were bound to tell the truth at all times and under all circumstances. Primitive Christians and other sects objected to war, and the idea became a very definite principle with the Quakers, but they utterly failed in living up to it.

It was strange that the Quakers, after having freed themselves almost entirely from dogma, should dispise higher education. Reading, writing and arithmetic were considered enough. In modern times they have greatly changed in this respect, and the Pennsylvania Quakers have made most successful efforts in the direction of higher education, as William Penn Charter School, and their colleges, Haverford and Swarthmore, abundantly prove.

The Quakers have also interested themselves in the education of women, and also in women's rights, which is the natural outgrowth of the liberty always allowed by them to women in preaching and in the conduct of church affairs. Bryn Mawr

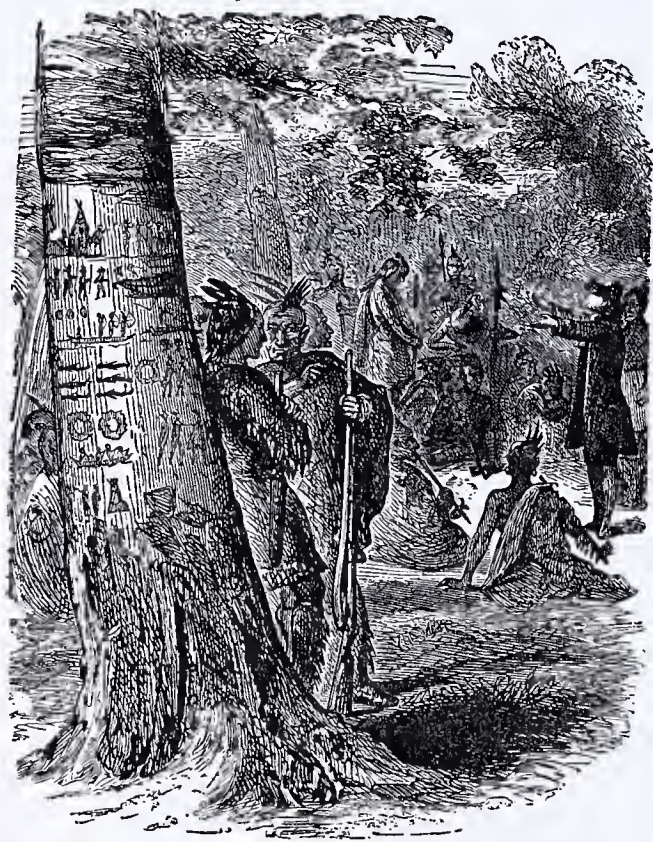
College, if not at the head of all those in the country devoted to the education of women, at least takes rank among the foremost.

Sidney George Fisher, in his "The Making of Pennsylvania," says: "It is easy to see a great deal in the regulations of the Quakers that seems narrow, belittling or impolitic. The rule which dismisses every member who married out of meeting seems suicidal, and has undoubtedly depleted their numbers. Many of their other customs seem also calculated to drive away able, spirited men and retain only the dull and commonplace. Yet it is astonishing how many remarkable men have been Quakers, and it is also curious to observe that most of them became remarkable by disregarding some of the most important regulations of the sect.

"John Bright, who so long held such an eminent position in English politics, was, however, unusually consistent for so distinguished a Quaker. But most of the others have seemed to grow great by breaking the rules. William Penn was a man of this sort. He had not been bred a Quaker, and he indulged in politics, handsome dress, and appointed military governors over his colony, to an extent that might have brought dismissal to a man of less ascendancy of character.

"It is rather curious that the most eminent Quakers should have excelled in the field of politics, war, art, and poetry, which were all under the ban of their doctrine.

They have produced abler men in these lines than in philanthropy, which was their special province. Their contemplativeness and spirituality may be the cause of the poets. As for war, it was said, in Philadelphia, during the Revolution, that the young Quakers who enlisted learned the manual of arms quicker than any others. It is certainly rather remarkable that Pennsylvania, a Quaker colony, should have produced so many distinguished generals and sent such a large proportion of troops to every war."



**John Woolman, Quaker, Preaching
to the Indians at Wyoming in 1763**

After William Penn departed from his province he only appointed one Quaker to serve as Deputy Governor, and this was Thomas Lloyd, a minister in the Society of Friends. Penn desired to avoid any conflict with the English Government and he probably feared that a conscientious Quaker might hesitate to execute certain orders regarding war, criminals, enforcement of laws, and many other items in which the Quaker took a determined stand.

Two very prominent Quakers in provincial Pennsylvania were James Logan and John Dickinson. Logan was a rare instance of a Scotch-Irish turned Quaker. He had a strong character, combined with scholarly and cultivated tastes. He was

a great lover of books, and founded the Loganian Library. He engaged in scientific pursuits. But the Scotch-Irish in him made him believe in war, he was Secretary of the Province, and his was a stormy career. Dickinson was an eminent lawyer, the author of the famous "Farmer's Letters," which had so much influence in the movement for independence. Like Logan he believed in war, carried a musket as a common soldier, and served as colonel of a regiment, yet would not sign the Declaration of Independence, because he believed it to be premature. Logan, Dickinson, West, Mifflin and many others were excellent citizens. They combined what was best in their faith with what was best in the world, but escaped what was narrow in both.

Quakers have played a great part in the world. They held their own in Pennsylvania for some years after the Revolution. Their disappearance from public life and influence changed the character of Philadelphia and not for the better. Various causes are given for the decline of the Quakers. It is usually attributed to some of their peculiar rules of discipline, and also to the increase of wealth among them. It will be a long time before the dominion of the Quakers disappears in Pennsylvania. Their numbers may grow less, but their influence is still potent, and many of their ideas have been unconsciously adopted by the people of other religions, among whom they have been living so closely for more than two and a half centuries.

Welsh—Among the early adventurers and settlers who arrived in Pennsylvania about the time of the grant to William Penn were many from Wales, called Ancient Britons. These people formed the most considerable body of emigrants for the first two decades after the founding of the Province in 1682. After 1700, they became comparatively few and of less importance.

Most of the Welsh who came here were Quakers, with a few Baptists and Episcopalians. They spoke their own language, and few of them had any knowledge of English. This afforded a rather unusual spectacle of an English province in which Welsh, German and Swedish were spoken by a large proportion of the inhabitants. The Welsh, however, had been encouraged in retaining their language and customs by an agreement made with the founder before they migrated.

As descendants of the Ancient Britons, who had been driven into a corner of England by the Saxon and Norman invaders, they felt that they were still a separate people, and, like the Germans, they hoped to have a country of their own in Pennsylvania. Penn had promised them a tract of forty thousand acres, where they could have a little government and live by themselves. They may have come here not simply to flee from persecutions, but quite as much to build up a Welsh community and to revive here Welsh nationalism.

No people ever landed upon Pennsylvania soil so well equipped by birth and fortune to cope with the perilous emergencies so frequently arising in a new country as these Cymric Friends. These, like so many of the Quakers, were of a well-

to-do class. They were persons of excellent and worthy character, and it has been remarked of these Welsh Quakers that they were not only the first ministers, but the first statesmen, the first lawyers, and the first physicians in Pennsylvania.

Thomas John Evan, of Bala, Merionethshire, who reached the Delaware River, April 16, 1682, was the first Welshman to come to Pennsylvania. But on August 13, following, Bala Welsh, led by Dr. Edward Jones, came sailing up the Schuylkill in the ship "Lyon," Captain John Compton, which date marks the first actual arrival of Welsh settlers.

They had purchased from William Penn five thousand acres of unsurveyed land, and with the larger tract promised by him they intended to settle it exclusively with Welshmen. They called it Duffrin Mawr, or the Great Valley. It closely resembled their own country in Wales. As the royal charter permitted Penn to erect manors, these early Welsh settlers expected to have a manorial jurisdiction. At all events, they had for a time some special privileges of local self-government, and the large tract of 40,000 acres was first known as the Welsh Barony and afterwards as the Welsh Tract.

Those who came first established the three townships of Merion, Haverford and Radnor on the west side of the Schuylkill River, but soon as their numbers increased they settled the three other townships of Newtown, Goshen and Uwchlam. Some of them spread out into Montgomery County, where Gwynedd and Penllyn still stand as memorials. Gwynedd Friends, concerning whom Howard M. Jenkins has written, came later than the Friends who settled upon the Welsh Tract. The Boones, Lincolns and the Hanks all appear on the Gwynedd Meeting records. Daniel Boone was a son of the George and Sarah (Morgan) Boone who came to Gwynedd from Devonshire. General Daniel Morgan is of this stock. Some of the Lincolns were Friends of Oley Meeting, in Berks County. General Winfield Scott Hancock was from the Gwynedd Country Meeting, and was of Welsh blood.

Their tendency to cling together and retain their language was largely overcome when Merion was separated and made a township of Philadelphia County. Up to that time they had been a controlling influence in Chester County. But the change placed them in a minority in both counties and hastened their assimilation by the English, which they strenuously resisted, and for a time refused to pay taxes.

When they refused to pay Penn quit-rents on more land than they actually occupied the barony was thrown open to settlement for people who were not Welsh, and little by little the Welsh disappeared as a distinct community. Some went west as far as Lancaster County, where we still have their name in the "Welsh Mountains." The trail made by them through the forest was the beginning of the Lancaster Pike, destined later to be a most noted national highway.

In the early days of the Province, previous to 1700, all the physicians in Pennsylvania appear to have been Welshmen. Of them Dr. Thomas Wynne presided over the first Assembly. Thomas Lloyd, several times Deputy Governor under Penn, was a Welshman, as were David Lloyd, the leader of the popular party in the Assembly, and afterwards Chief Justice, and Thomas Ellis, Register General.

The Pennsylvania Railroad has preserved the remembrance of these ancient Britons in the names of its stations Merion, Wynnewood, Haverford, Bryn Mawr, Radnor, St. David's, and Berwyn. There are still townships called Tredyffrin, Eastcaln, and Uwchlan. The names of Humphrey, Powell, Pugh, Lloyd, Cadwalader, Meredith, Roberts, Owen, Evans, Williams, and Thomas are familiar.

The patron saint of the Welsh was St. David, and this name was given to the little Episcopal Church, which has survived more than two hundred years at Radnor, about which Longfellow wrote a poem, and in whose churchyard William Moore and General "Mad" Anthony Wayne now rest in quaint graves.

There are to be found today many members of the Welsh element in our population who hold prominent positions in our industrial enterprises.

Sectarians—The Quakers were obliged to share Pennsylvania with a large number of Germans, who constituted that virile body of the population still known as Pennsylvania Dutch. Most important in its effect upon the Province and the future of the Commonwealth was the influx of Germans, which began soon after Penn received his charter. This was also the first appearance of Germans on the American Continent. They are today progressive farmers and leaders in politics, literature, the arts, and in science.

The struggle for the possession of the New World, which began soon after the first voyage of Columbus, had been confined to the Spanish, Portuguese, French, Dutch, Swedes, and English. The Germans, distracted by their own political divisions, took no part in the conquest, and seemed to have no desire for colonization. They finally appeared in Pennsylvania half a century after most of the English colonies had been established, but they came as immigrants under the protection of the English nation, at first by encouragement and persuasion of the Quakers, and afterwards by the encouragement and assistance of the British Government.

It is quite natural that the first great increase of alien population should come from Germany. That country was then in a state of religious turmoil. The German mind was at the height of its emotional unrestraint. It was unaccustomed to liberty of thought as to political liberty, and this condition produced a new religious sect almost every day.

Many of these new religious clans came to Pennsylvania. Among them were Mennonites, Schwenkfelders, Tunkers, Labadists, New Born, New Mooners, Separatists, Zion's Brueder, Ronsdorfer, Inspired, Quietists, Mountain Men, River Brethren, Brinser Brethren, The Society of the Woman of the Wilderness, and many others, the names of which occur in the annals of the Province. In Lancaster County alone there are more than a score of these sects.

The Germans are usually described as consisting of two main divisions, the sects and the church people. They came over between the year 1682 and 1702 and formed a class by themselves. They were generally well educated, thrifty, and excellent people. The sects arrived first, some of them as soon as the Quakers, and were made up of the Mennonites, Tunkers, Schwenkfelders, and others. The

church people belonged to the regular churches of Germany, the Reformed and the Lutheran.

Surely much of the mysticism of these sects would not have been congenial to the followers of George Fox and William Penn, yet there were similarities to the Quaker doctrine. This is particularly true of the largest of these sects, the Mennonites, who are often spoken of as the German Quakers.

William Penn, in his early days, made two visits to Holland and Germany, where he spoke to the people of the new doctrine of the Friends. He found many of these to be much like them in their ideas, chiefly the Mennonites, who did not believe in war or display, but used plain speech and more simple clothing. They had long been persecuted like the Friends, and were glad to hear these new doctrines. When they were told, in later years, that this same William Penn had made a new home across the seas, where all could worship freely in their own way, many of them hastened to the land of freedom.

The Mennonites, named after their leader, Menno Simons, were mostly Germans, though some Hollanders joined them. Of all the Germans and Hollanders who came to Pennsylvania during Penn's administration none were in such accord with the spirit and hopes of the great founder and statesman. If there is, and there should be, much in religious heritage, no sect in America can lay claim to a nobler history, quiet and seemingly unknown though it be.

Nearly twenty years before Penn received his charter Gustavus Adolphus, of Sweden, invited the Mennonites to seek asylum on the Delaware River. A small company, about twenty in number, under the leadership of Pieter Cornelius Plockhoy, an enthusiastic Mennonite, born at Zierik Zee, in Holland, heeded his call and settled at Swanendael, in 1662. Two years later they were scattered and destroyed by the English, when the country was captured from the Dutch, and played no further part in colonial history. Plockhoy and his wife escaped capture, and after many years wandering in the wilderness came to Germantown. He was then old and blind, but they were cared for and given a house and garden for the rest of their lives.

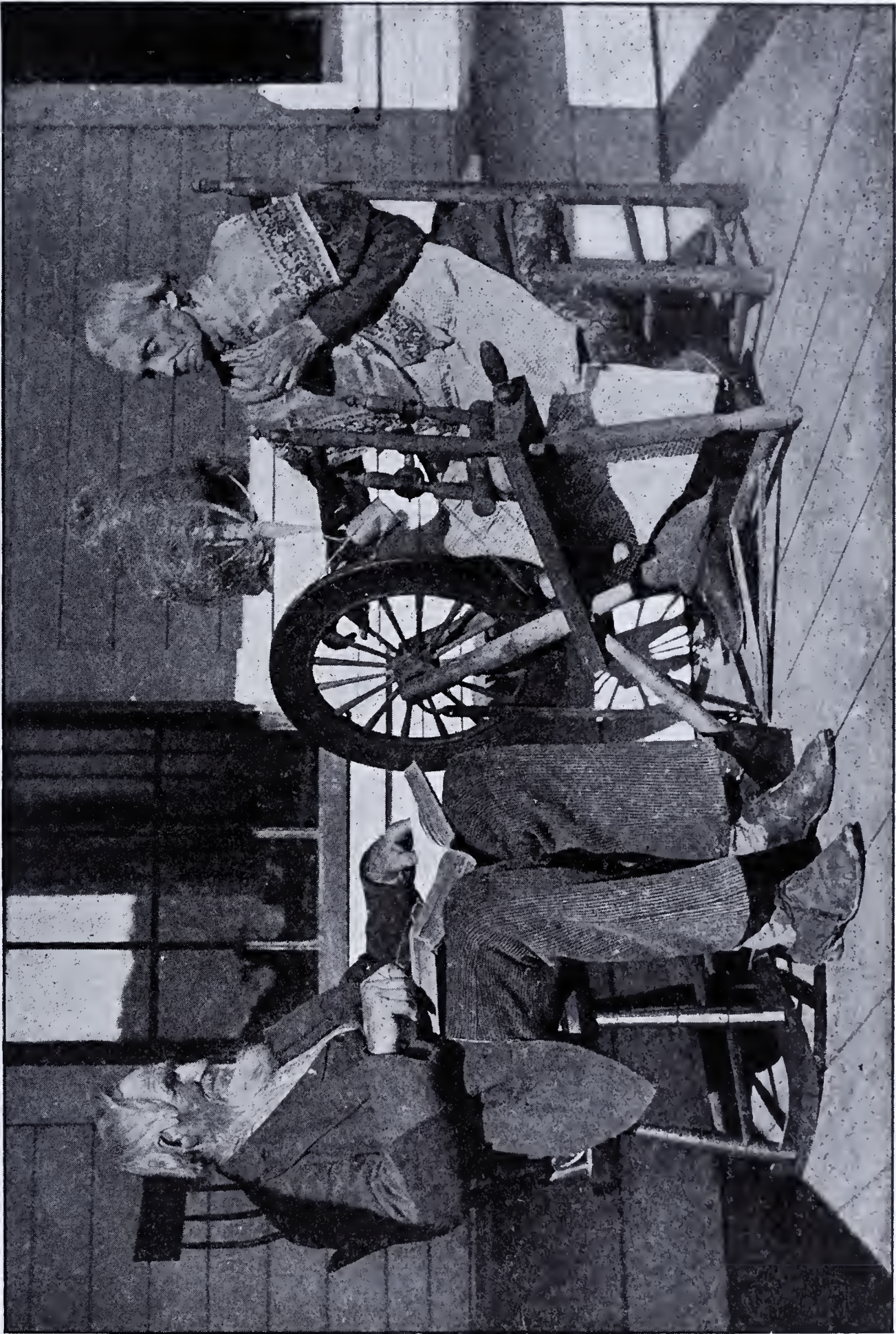
The first German emigration was from Crefeld, a city of the lower Rhine. William Penn had conveyed 5,000 acres in Pennsylvania to each of three merchants of that city, March 10, 1682, one of whom, Jacob Telner, had made a trip to America in 1678-81. Francis Daniel Pastorius* first heard of the Pennsylvania

*Francis Daniel Pastorius was born in Sommerhausen, Germany, September 26, 1651. He was the son of a wealthy judge, and had received a classical education and entered upon the practice of law. He was the master of eight languages and well read in science and philosophy.

He joined the sect of Pietists, and concerted with some of his co-religionists a plan for emigrating to Pennsylvania.

When he first arrived in Philadelphia, and before he established himself in Germantown, he lived for a time, like many of the Quakers, in a sort of a half hut, half cave, on the steep bank of the Delaware. Over the door of this abode he placed a Latin motto which said: "My house is small, but open to good men and closed to evil ones." This serious motto on such a mean house gave Penn much amusement when he first visited the Province.

In Germantown, however, he built himself a substantial storehouse, and until his death, September 27, 1719, Pastorius was a man of great influence among the colonists. He wrote several important treatises and some poetry. Several volumes were left by him in manuscript, containing philosophical reflections, poems, notes on theology, medicine and law.



Piety and Industry

plan in 1682, and became a purchaser while in London, in May or June, 1683. Eight of these first purchasers formed the Frankford Company, November 12, 1686. Up to June 9, 1683, these individuals had purchased 15,000 acres. Pastorius was the only one of them who ever came to Pennsylvania. Three were Mennonites, but many of the party were members of that sect, so it must be stated that this emigration was also the beginning of that great church in America.

Thirteen families, comprising thirty-three persons, set out for London, from which city, after many delays, they embarked July 24, 1683, aboard the "Concord," and after a pleasant voyage, reached Philadelphia on October 6. On the 10th a warrant was issued to Pastorius for 6,000 acres "on behalf of the German and Dutch purchasers." On the 24th Thomas Fairman measured off fourteen divisions of land, and the next day, meeting together in the cave of Pastorius, they drew lots for choice of location. They began immediately to dig cellars and build huts in which, not without much hardship, they spent the following winter. Thus commenced the settlement of Germantown.

Under a warrant of May 2, 1682, 5,350 acres were laid out for Pastorius, as trustee, and in addition 200 acres were laid out for him in his own right and 150 acres for Jurian Hartsfelder, a stray Dutchman, who had been a deputy sheriff under Governor Andros in 1676, and who now cast his lot with these settlers.

Bom wrote to Rotterdam, October 12, 1684: "I have here a shop of many kinds of goods and edibles. Sometimes I ride out with merchandise, and sometimes, bring something back, mostly from Indians, and deal with them in many things. I have no regular servants except one Negro, whom I bought. I have no rent or tax or excise to pay. I have a cow which gives plenty of milk, a horse to ride around, my pigs increase rapidly, so that in the summer I had seventeen when at first I had only two. I have many chickens and geese, and a garden, and shall next year have an orchard if I remain well, so that my wife and I are in good spirits." Bom died before 1689, and his daughter, Agnes, married Anthony Morris, the ancestor of the distinguished family of that name.

A small church was built in 1686. It is strange, but true, that this was a Quaker meetinghouse, and also that before 1692 all the original thirteen, except Jan Lensen, had in one way or another been associated with the Quakers.

An event of importance was the arrival of William Rittinghuysen, a Mennonite minister, who with his two sons, Gerhard and Claus, and a daughter, came from Holland. In 1690 he built the first paper mill in America on a branch of the Wissahickon Creek.

On April 18, 1688, Gerhard Hendricks, Dirck Opden Graeff, Francis Daniel Pastorius and Abraham Opden Graeff sent to the Friends' Meeting the first public protest ever made on this continent against the holding of slaves. There was then started something which became the greatest question of all time in America.

On January 14, 1690, 2,950 acres, north of Germantown, were divided into three districts, called Krishelm, Sommerhausen, and Crefeld. The village had now

become populous enough to warrant a separate existence, and on May 31, 1691, a charter of incorporation was issued to Francis Daniel Pastorius, bailiff, and four burgesses and six committeemen, with power to hold a court and a market, to admit citizens, to impose fines, and to make ordinances. It was ordered that "on the 19th of one month in each year the people shall be called together and the laws and ordinances read aloud to them."

The seal was devised by Pastorius and he honored the weavers by selecting a clover, on one of the leaves being a vine, on another a stalk of flax, and on the third a weaver's spool. Most of the Crefeld emigrants were weavers, and Germantown grew to be called a place "where live High German people and Low Dutch, whose trade in weaving linen cloth is much."

There were also among the inhabitants printers, lacemakers, silversmiths, and other artisans. The settlers of Germantown contributed not a little toward making Philadelphia the leading manufacturing city of America.

On June 28, 1701, a tax was laid for the building of a prison, erection of a market, and other objects for the public good. The prison preceded the school-house, but the interval was not long. December 20, following, "it was found good to start a school here in Germantown." Pastorius was the first pedagogue.

As early as January 25, 1694, stocks were erected for the punishment of evildoers.

February 10, 1702, three square perches of land were given to the Mennonites for a church, which edifice was built 1708.

Little did the industrious German of that day think, as he tilled the soil, or worked at his trade, that in after years the countrymen of Penn would be fighting the Quakers and others in that very town, that the streets of Germantown would be reddened by English blood, as it was on that eventful day, October 4, 1777.

The government of Germantown lasted fifteen years, until January 11, 1707. Today this old town is one of the most delightful sections of the old city of Philadelphia.

Society of the Woman of the Wilderness—Many of the early German inhabitants of Pennsylvania seemed to be drawn to a quiet, reflective life. Some of them became hermits and lived in caves. A number of such were to be found in the ravines near the Wissahickon in what is now Fairmount Park. Johannes Kelpius was the leader of one of these sects, probably the most extreme of all the groups of pietists. He is spoken of by Whittier in his "Pennsylvania Pilgrim." He knew Latin, Greek and Hebrew, and wrote English well. These pietists were much given to prayer and pious thought. A stone building put up by them for religious uses in 1734 still stands and is known as the "Monastery on the Wissahickon."

Kelpius and his company of "Erweckte" arrived in Philadelphia June 22, 1694, and two days later reinforced the German colony already established at German-

town. The most prominent among this company of "Awakened Christians" were Henry Bernard Koster, who made a translation of the Bible, Daniel Falkner, Johannes Seelig, Ludwig Biderman, and Peter Schaffer, altogether about forty. Kelpius, known as the "Hermit of the Wissahickon," led the ascetic dreamers to the ridge near the Wissahickon, where they organized the "Society of the Woman in the Wilderness," and indulged in their religious notions, free from the intolerance that drove them from their native land.

Kelpius belonged to a noble family in Germany, had studied divinity at Altorf, where he became the pupil and friend of Professor John Jacob Fabricus. He also became a follower of Philip Jacob Spencer, the founder of the sect called "Pietists." In London he became acquainted with Jane Leade, the founder of the Philadelphia Society. Of course, his peculiar views met with opposition, and the desire was uppermost to live where religious liberty could be enjoyed. At the age of twenty-one, Kelpius led his little company to the New World and settled at Germantown, where they soon attracted much attention by their dress, peculiar doctrines, and holy way of living. They built a hut or cave and walled in a spring of water. There they lived as an unbroken brotherhood for about ten years. They held their religious services in the groves and crowds of curious people assembled to hear the preaching of the hermits. It is said that they taught little children that were brought to them.

This band of dreamers sat on the high precipice near Hermit's Lane, watching for the millennium to dawn and for the coming of the woman "clothed with the sun, and with the moon under her feet, and with twelve stars on her forehead"—she who had fled into the wilderness. Like the "Millerites" of a later period, they laid aside all business, became hermits and awaited the harbinger. Kelpius was a firm believer in the millennium, said it was near at hand, and often said he should not die till he saw it.

After the death of Kelpius, in 1708, the work was continued by his pupil, Johannes Seelig, who became the most extreme ascetic of the group, but the society gradually disbanded. Conrad Matthias, a Swiss, continued as a leading figure and was the last of the hermits when the organized group disintegrated in 1715. Many of the followers of Kelpius joined the Seventh Day Baptists at Ephrata, but others, when the millennium failed to keep its appointment with them, and the wonderful stone and elixir of life failed to materialize, went back to the world and turned their learning to some practical use.

Whittier, in his "The Pennsylvania Pilgrim," speaks of Kelpius, the hermit, as:

Painful Kelpius from his hermit den
By Wissahickon, maddest of good men.

The ruins of Kelpius' cave is still on Hermit Lane, along the stream he loved so much, and there is also the spring said to have been dug by "The Hermit of the Wissahickon" in 1694.

These peculiar pietists were men of learning and all in easy financial circumstances. They were astrologers and practiced and taught magic, divining and healing. Their services, medical, spiritual and educational, were given free, so they were greatly beloved by the people, especially by the Indians. Dr. Christopher Witt belonged to this society and was a distinguished physician. He was also a conjurer, and frequently lifted the veil from the future, pointed out the place where stolen goods could be found, and the thieves who stole them. Such was the superstition of the people that his practice became very lucrative. When Pastorius ceased to be the agent of the Frankfort Company, Kelpius was chosen in his place, but it does not appear that he ever acted as such.

Tunkers—Some of the Germans who came with the Mennonites were called Pietists. Pietism assumed many forms, but in the main was part of the reaction against dogma. It prevailed more or less among the Lutherans, the Reformed, and somewhat among all the religious divisions of Germany. Its adherents opposed all rigid systems of theology. At times it was mystic. Only a few who were distinctly known as Pietists came to Pennsylvania, but pietism in some form or other prevailed among most of the sects and church people.

The Tunkers, who were somewhat pietistic, came in large numbers, and were recruited largely from the Reformed Church of Germany. They were similar to the Mennonites, but were peculiar in dress and manners.

The word Tunker means a dipper, a baptiser by immersion. In Pennsylvania it has become corrupted into Dunker, Dunkard, Tumpler, Dumpler, and German Baptists. The men wore long beards and coarse clothes and refused to take oaths or bear arms.

The Tunkers first appeared in Germany in 1708, and were driven by persecution to Grefeld and Holland. Between 1717 and 1729 the whole sect came over to America, most of them settling in Germantown, Pennsylvania. They grew and prospered as a religious body, and in 1850 are said to have numbered, in the United States, over two hundred thousand, with a thousand ministers.

In 1719, the first colony of the Tunkers, twenty families, to come to America arrived at Germantown, led by Alexander Mack. The two sects built up the pretty village. Some of their houses, together with a few descendants, are still to be found there.

The Tunkers and Mennonites established schools, a printing press, and a newspaper conducted by Christopher Sower (or Sauer), who became an elder in the Tunker denomination. The old Germantown Academy, which still exists, was founded, in part, by their efforts. For more than a century Germantown was the seat of these German-Americans. Sower's newspaper and almanacs had a wide circulation among all the Germans from New York to Georgia. For a time he also published a magazine, the first one in America. He also published the first German Bible that was printed in America, and for this and other publications he manufac-



Home of Christopher Sauer, Germantown

tured his type, paper, and ink, and bound his own books. He also sold medicines and practiced as a physician. His son, of the same name, continued his business, inherited a large part of his influence, and added two hundred books to the list of his father's publications. Descendants conduct this business, which is one of the oldest in continuous operation in the Commonwealth.

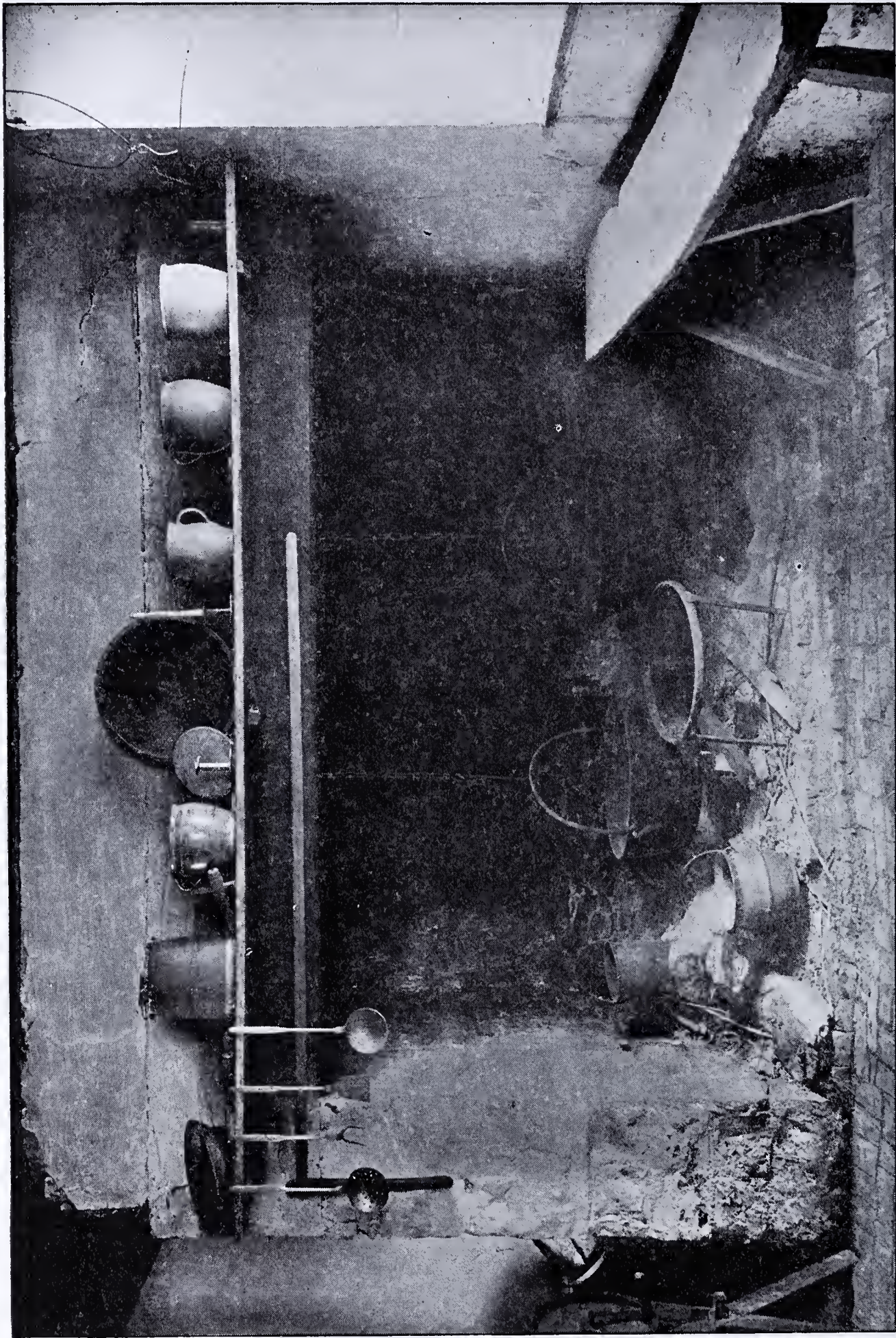
Schwenkfelders—The Schwenkfelders, from Silesia, followers of Caspar Schwenkfelder, born in 1490, a contemporary of John Huss, and of whose views George Fox was the English exponent, came in 1734, and settled in what is now Montgomery County. They were the last important German sect to come to Pennsylvania.

The followers of Schwenkfelder were found in many parts of Germany. These people were subject to adverse winds from their very beginning, and later were practically outlawed by the Augsburg Confession, the Truce of Nuremberg, the Treaty of Augsburg, and the Treaty of Westphalia. The imperial government failed in its effort to convert the Schwenkfelders to Catholicism and recourse was taken to force and compulsion. Driven to desperation these Christians decided to escape their persecutors by flight.

An appeal to Count Nicholas Zinzendorf to find a place for them in Herrnhut brought assurance that they would be welcome in his dominion, when nearly five thousand fled to Saxony in 1727, where they found temporary shelter. Their position, however, was precarious, entirely dependent upon the good will of the Elector, August I. When he died, in 1733, the Jesuits soon succeeded in persuading his successor to order their removal. Hence an edict issued at Dresden, in April, 1733, commanded Zinzendorf to insist on their departure within a year. Strenuous efforts were made to secure an asylum for them in the neighboring countries, which failed, when they turned their thoughts to the New World.

Zinzendorf was also alarmed at this time for the safety of the Moravians, and was planning a home for them in Georgia, but this scheme not having materialized, they turned to Pennsylvania, of which they had known for some time. The Schwenkfelders secured permission of the crown of England to migrate to this home of religious freedom, and turned into money whatever they possessed.

The actual migration began on Tuesday, April 20, 1734, and by the 28th, all having arrived at Pirna, they took ship and sailed down the Elbe to Altona, where they remained eleven days. On May 25 they left in three vessels, reaching Amsterdam on June 6, and were soon at Rotterdam, where they embarked on the 28th in the ship "Saint Andrew," Captain Stedman. The voyage was uneventful but pleasant, only one severe storm, yet ten persons, mostly children, died on the journey. Land was sighted September 17 and Philadelphia reached on the 22d. The day after arrival sixty Schwenkfelders over sixteen years of age went early in the morning to the courthouse and declared their allegiance to the King of England and their fidelity to the Province. The following day, September 24, was observed



Pennsylvania German Fireplace

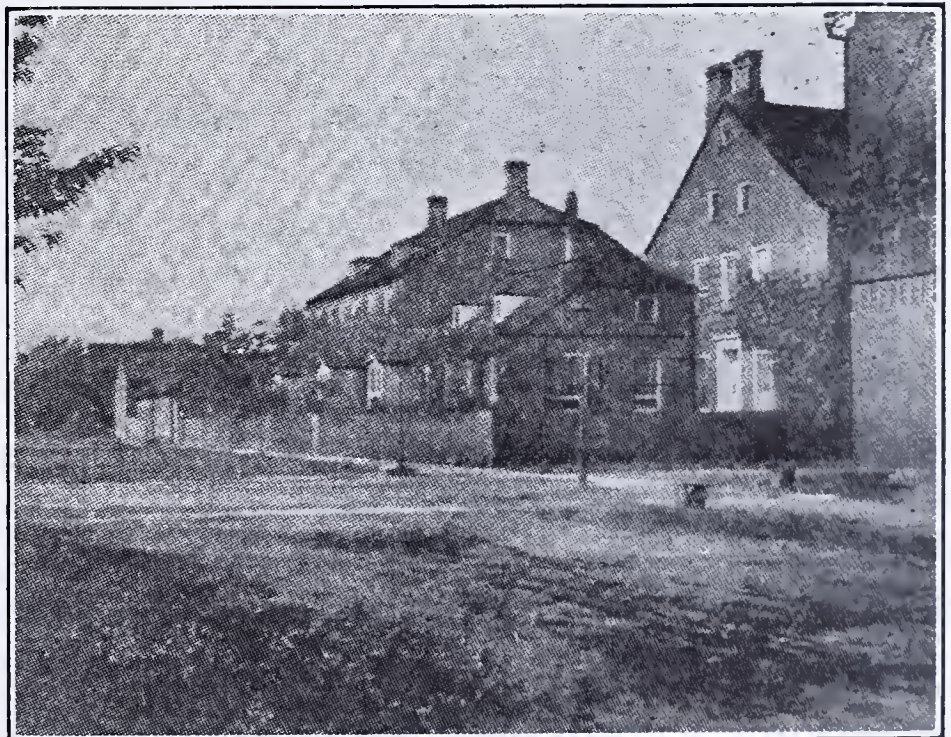
as a day of thanksgiving, under the leadership of their pastor, George Weiss. This event was the origin of a Memorial Day which has been observed every year since. The Schwenkfelders are the only body of immigrants to observe such a day for nearly two centuries.

Like the Quakers, Mennonites, and Tunkers, the Schwenkfelders were opposed to war, oaths, display, and to all church sacraments. They had been the victims of persecution in Europe for more than 300 years, and had to worship in secret to prevent detection, hence they became accustomed to worship in private houses and barns, and for nearly fifty years after their arrival in Pennsylvania they had few public meetinghouses. There was no ringing of bells and chanting of hymns. They taught their children at home.

They located home sites in the Perkiomen Valley, and in Bucks and present Lehigh counties. They have many churches and fine schools. The late Governor Samuel W. Pennypacker said of these Schwenkfelders that "they were the most intelligent group who came to Pennsylvania in the colonial period." These people have contributed much in literature, art, and music.

General John Frederick Hartranft was a descendant of the Hartranft immigrant among the Schwenkfelders. He was a major general in the Civil War, twice Auditor General, and Governor, 1872-78.

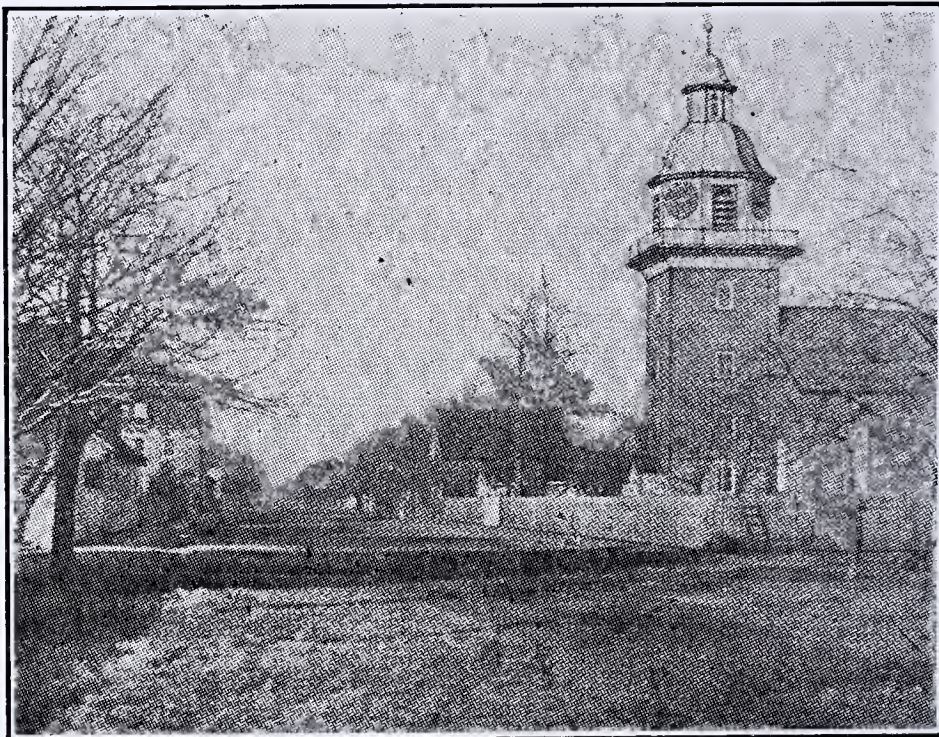
Harmonites—The Harmony Society, as it was organized by George Rapp in Württemberg, and established in America was an outgrowth of a separatistic movement in Germany, and an attempt to put into practice, under favorable circumstances, separatistic principles. Rapp displayed rare judgment in making his plans and great ability in executing them. He came to Pennsylvania in 1803, at his own expense, and after looking over sites in Lancaster and Lycoming counties, he purchased 5,000 acres on the Connoquenessing Creek, in Butler County. He then sent for his people.



Street Scene in Economy

The members of the society had constituted a congregation in Württemberg, and according to the instructions of their pastor, George Rapp, they followed him to Pennsylvania. Rapp maintained himself as their leader. In order to perpetuate the society, articles of association were signed February 15, 1805, which date was annually celebrated as the "Harmonie fest."

During the first fifty years log houses were built at Harmony, and nearly 200 acres cleared, and a house of worship, gristmill, barn, and shops were erected. A sawmill, tannery, distillery, and brick storehouse were added and a vineyard planted during the following year. They soon made woolen cloth, and in 1809 had erected a woolen factory for manufacturing broadcloth from the wool of Merino sheep, the first such stock to be brought to America.



Scene in Economy

After some disappointments the Harmony Society removed to Indiana, in 1815, but ten years later returned to Pennsylvania and settled at Economy, Beaver County. This society remained intact, although reduced in membership, until May 12, 1903. Much of the property of the Separatists is now owned by the State.

Ephrata—An important offshoot of the Tunker colony became the German Seventh-Day Baptists. This schism was accomplished by John Conrad Beissel. The chief difference in doctrine was that the Tunkers believed in immersion, while the new sect baptized by sprinkling.

Beissel was born in Eberbach, Germany, in 1690, learned the trade of a baker, and came to America in 1720. He embraced the religious views of Alexander Mack, lived as a recluse for several years and at different points, and finally located on the banks of the Cocalico Creek, in Lancaster County, February 4, 1732. Here he continued to live as a hermit and advocated the doctrine of celibacy and the seventh day of the week as the proper day of rest and religious worship. He was well versed in New Testament theology; possessed a commanding appearance, a fluent talker, and in most respects was well calculated to gather around him a large class of both sexes. He was soon joined in his new home by Martin Brenner, Samuel Eckerline, and another whose religious name was "Brother Jethro." These were soon followed by Anna and Marie Eicher, from the Conestoga Church, two of Beissel's former converts, who could not endure the pangs of separation from their spiritual teacher. This nucleus of a church was joined in 1733 by Israel and Gabriel Eckerline, and in the following year by a large number from Oley and Coventry, in Chester County, and a large congregation of Germans from Schoharie County, New York. Soon the congregation at Falkner Swamp joined them and Beissel had suddenly become the spiritual teacher of a large settlement named

Lager, meaning an encampment, but the name of which was subsequently changed to Ephrata, by which the place is still known.

Peter Miller came to America in 1730, and soon became pastor of a small Reformed congregation at Tulpehocken. He was a classical scholar and a good theologian, and after an interview with Beissel, he became one of his apostles, casting his lot with the Brotherhood of Ephrata.

Within five years the people of this religious community had accumulated a large area of landed property which was held as common stock. The monastic system was soon inaugurated, and Beissel assumed the name of "Friedsam," to which was added the suffix "Gottrecht," together meaning Peaceable, God-right.

The first building erected under the monastic system, in 1735, was on "Mount Zion," and named Kedar. It contained one principal room for religious worship, love-feasts, and the ceremony of feet-washing. Besides this there were other rooms, very small, for the use of the brethren and sisters, those of the latter being in the upper story. Another building larger in dimensions, and called "Zion," was built on the same hill in 1738. These, as well as several buildings of a later erection, were covered with shingles on the roof and outside walls, and remain thus covered to the present time.

In the year 1740 there were in the Ephrata cloisters thirty-six single brethren and thirty-five sisters; and at one time in later years, when the society was at the height of its prosperity, the whole congregation, including those living outside the principal buildings, but in the immediate neighborhood, numbered about three hundred.

The buildings in this cloister afforded but rude and poor accommodations to the inmates. Ceilings were barely seven feet in height, and passages so narrow that two persons could not pass each other in them, with very low and narrow doors, swinging on wooden hinges and fastened by wood latches, with cells hardly large enough to hold a cot, and each having only the light and ventilation afforded by a single window, eighteen by twenty-four inches in size, and containing only the most indispensable articles of furniture, and that of the rudest description. In each cell was an hour-glass, and the walls were covered with German text passages of scripture and verses or original poetry by Beissel. The brethren slept on wooden benches, with wooden blocks for pillows. Probably the dormitories of the sisters were a little better furnished in that particular. These houses were certainly anything else than abodes of luxury for those who inhabited them.

The religionists wore a cowl and gown of white—linen in summer, woolen in winter. The cowl of the sisters differed but little from that of the brethren. The difference between monk and nun could scarcely be discovered at a little distance. Both sexes went barefooted, except in extreme weather. They lived on food of the plainest kind, consisting almost entirely of bread, vegetables, and mush. No animal food was on their tables, and even butter, cheese, and milk were discountenanced. All their vessels for communion and ordinary drinking purposes, also their

trays, plates and other articles for table service, and even their candlesticks, were of wood, and manufactured by the brethren.

In the beginning of Ephrata the plow was drawn by the brethren ranged in a long line on each side of a rope, and even the sisters often assisted in this labor. Later oxen and horses were procured to perform this work.

A paper mill was built and paper manufactured for use on their own printing presses, which had been introduced as early as 1742, the first book being printed for Israel Eckerline in 1744. Many very fine publications came from these presses. A sawmill, a flourmill, a fulling mill, and a mill for making oil from flaxseed were put in operation. All these served the outside community and the workmen were renowned for scrupulous honesty.

Singing schools were begun in 1742 and a Sabbath school was started as early as 1740. This was the first Sabbath school in America. During the Revolutionary War these pietists printed the paper money for the colonies, and their buildings were used in the fall of 1777 as a hospital for the wounded from the battle of Brandywine; here their women nursed the sick and wounded soldiers.

After more than forty years of spiritual leadership Beissel died July 6, 1768, and Peter Miller, who succeeded him, was one of the most learned men in America. He translated the Declaration of Independence into seven languages by order of the Continental Congress. The society steadily declined, until the year 1875, when disputes divided them into two factions, and consequently into legal entanglements, and the effect of the community as a religious enterprise became inconsequential.

Palatines—Besides Holland many of the so-called Pennsylvania Dutch came from the German side of Switzerland. But the great mass of them came from Germany proper—from Alsace, Suabia, Saxony, and almost every principality of that distracted empire, but most of them from those parts of it called the Palatinate. They were often spoken of as Palatines, and in passenger lists of the emigrant ships were always described by that name down to the year 1740.

The Lower and Upper Palatinate were divisions of the German Empire, whereon the master was given certain jurisdiction of cases which the King had a right to decide. He was called a count palatine. The word was frequently used to describe a petty prince in any country; and we find the Episcopalians in Pennsylvania complaining, at one time, that William Penn boasted that he was the Palatinate of Pennsylvania.

The Lower Palatinate lay upon the Rhine, near the provinces of Alsace and Lorraine. The Upper Palatinate lay towards the southeast on the Danube. Most of the Germans who came to Pennsylvania appear to have been from the Lower Palatinate, which suffered most from the persecution and invasion of the French.

The Palatinate was at different times ruled by a Lutheran, a Reformed, and a Catholic. At each change the people had to conform or suffer. It was such trouble, so long continued, that encouraged the sects to come to Pennsylvania.

From 1682 to 1702 the German immigration was comparatively slight. In the latter year Mathias Van Bebber, a Hollander of some wealth, established a patroonship upon the Skippack, in present Montgomery County. In 1709 a colony of German Mennonites, under the leadership of Hans Herr, settled on the Conestoga, in what became Lancaster County.

When Queen Anne ascended the throne of the British Empire in 1702 her ministry determined to keep the English more at home and to fill up the American colonies with Germans, provided they were Protestants, and hostile to France and Spain.

To this end efforts were made to collect the discontented and oppressed Germans and transport them to the colonies. Books and pamphlets were circulated in the Palatinate, which produced such great effect that during two years, 1708 and 1709, over thirty thousand Germans crossed over to England. They were sheltered in tents near London and the process of transporting them to New York, Pennsylvania, and the Carolinas was begun. The policy of importing Germans to the colonies found favor with English statesmen for the next seventy years. Vessels were chartered to proceed to Rotterdam and load Palatines for Pennsylvania just as they were chartered for cargoes of rum, molasses, or Negroes.

Five Indian chiefs from the Iroquois Confederation in New York, constituting an embassy to the British Government, witnessed the misery of an encampment of these exiles from the Palatinate, on the shores of England, and pitied them so sincerely as to offer to open for their settlement part of the lands under their control. This offer led to the migration, in 1710, under the royal charge, of four thousand to the colony of New York.

These Palatines expected good land and formed high hopes that their industry would restore them to prosperity and happiness. But Governor Robert Hunter along with Patroon Robert Livingston, planned their own profit out of the bondage of these strangers, and the latter soon realized it had been as well to have died at home as to suffer and die here. The land to which they were assigned was miserably lean and too remote, and the persecutions of these deluded people became severe and intolerable. When Governor Keith, of Pennsylvania, heard of their plight, he invited them to come to his colony, and promised them good land. Many at once determined to migrate thither.

In the spring of 1723, John Weiser, a leader of the colony, set out at the head of thirty-three families, and guided by Indians, cut their way through the forest to the

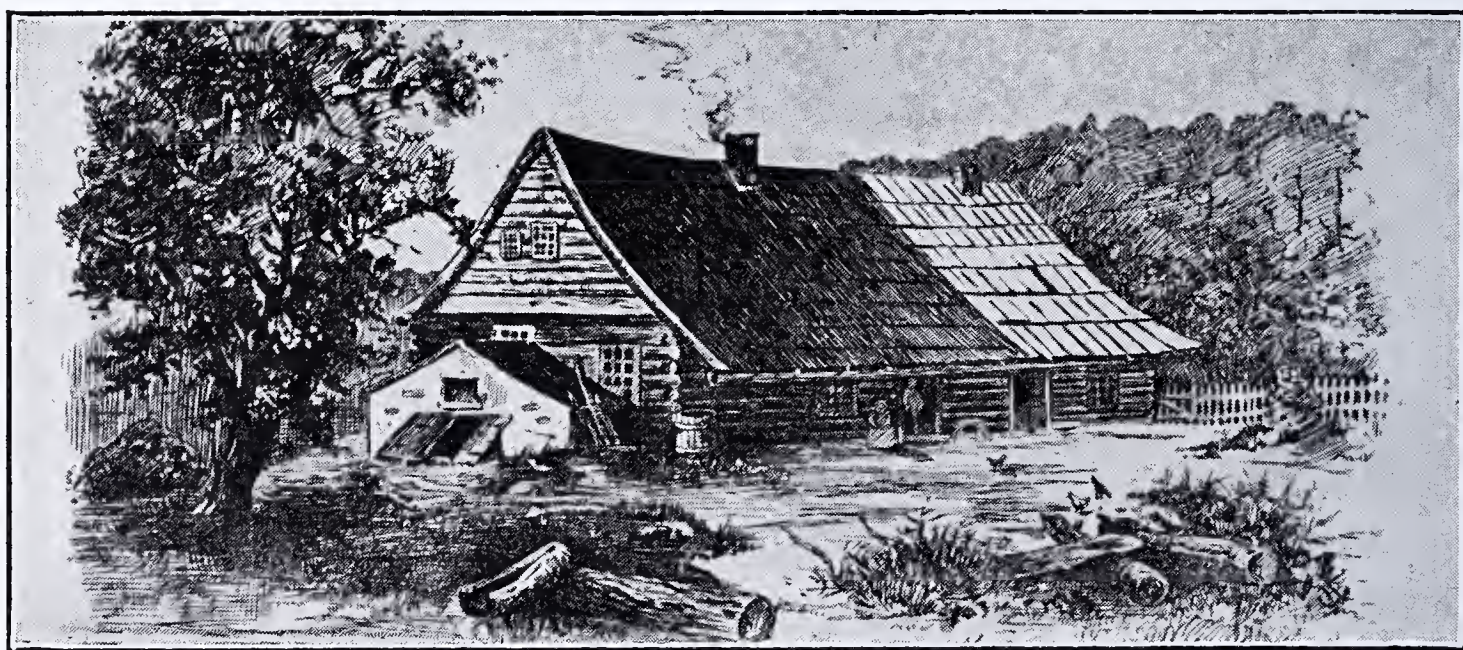


Conrad Weiser in His Old Age

upper waters of the Susquehanna. Here they built heavy rafts to contain their domestic utensils, and canoes for themselves, on which they floated down that stream, accompanied slowly by their cattle which was driven along the river's banks. Arriving at the mouth of Swatara Creek, where Middletown now stands, they entered that stream, and pushed up the beautiful Lebanon Valley until they reached the Tulpehocken region, nestling at the foot of the Blue Mountains, and here they pitched their camp for the last time—it was home. Conrad Weiser and his young wife followed the elder Weisers and settled near Womelsdorf.

A regular traffic in emigrants was established by unprincipled shippers, as there were many of the Palatines so poor that they could not pay for their transportation across the sea, and they voluntarily sold themselves into servitude for a number of years, as a means for reimbursing the agents for their outlay. This class of servants came to be known as "Redemptioners," or "Indentured Servants," in distinction from slaves, as their services were limited and self-imposed. At the end of their term of service they were merged into the mass of population without any taint of servitude. No stigma or disgrace clung to any of these people under this system. It was regarded as a necessary business transaction. Many respectable families and some of our most prominent men are known to be descended from redemptioners.

Moravians—The Moravians originated among the followers of John Huss in Bohemia and Moravia in the fifteenth century. Their church had been variously known as the Brethren's Church, the Unitas Fratrum, the Bohemian and Moravian Brethren, the Church of the United Brethren, and the Moravian Church. Their religious beliefs did not differ greatly from those of the Lutherans.



Gemein Haus, Bethlehem. Erected 1741

The Moravian sect was not originally German. Its germs appear as early as the ninth century, when Christianity was introduced into Bohemia and Moravia. During the persecution of Protestants early in the seventeenth century this church

in those counties was almost extinguished, and its faith—a hidden seed—was preserved by a few families for a hundred years, when it was renewed with strength. The Moravians date the beginning of their renewal when they became a German sect, from June 17, 1721, when the first tree was cut down for them on the estate of Nicholas Lewis, Count of Zinzendorf, but the date usually given is 1722. Zinzendorf was an officer in the Saxon court, and a lover of pure and simple worship. In five years three hundred Moravians gathered there, and the settlement was called Herrnhut. Zinzendorf became a bishop, and afterwards spent his entire life and fortune in missionary work. Churches were established on the Continent, in Great Britain, and in North America.

The first Moravian Evangelist came to Pennsylvania in 1734, and a number of Moravians settled in Georgia in 1735, working mostly among Negroes and Indians. They could not conscientiously take up arms to defend Georgia against the Spaniards at St. Augustine, so they abandoned their settlement and came to Pennsylvania, where a permanent settlement arose, in the present Northampton County, with organized activities in Philadelphia and New York, and an extensive itinerary among white settlers and Indians.

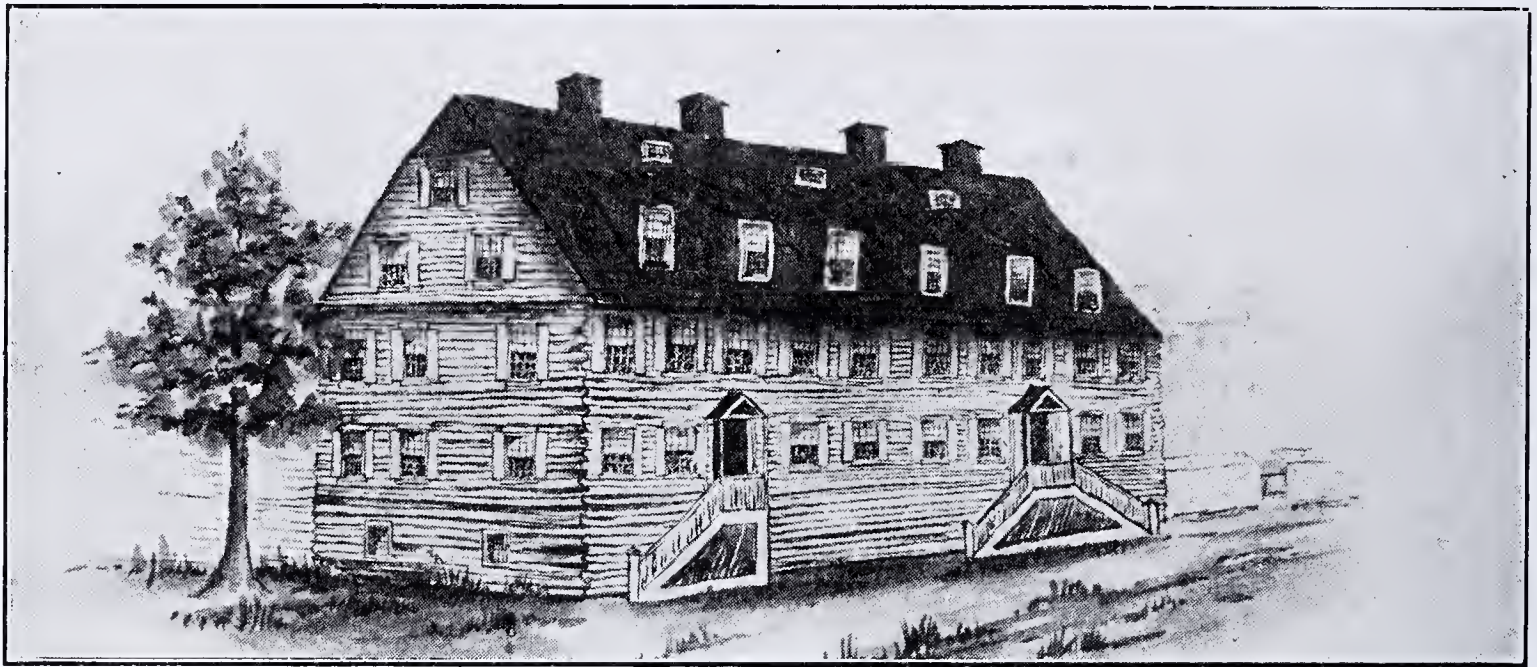
Reverend George Whitefield, the famous preacher, who was also interested in Georgia, where he preached and established an orphan school, during a voyage from Savannah to Philadelphia, determined to establish a school for Negroes in Pennsylvania, as he believed here is where the Negro was best treated. For this purpose he purchased 5,000 acres in the Forks of the Delaware, May 3, 1740, which he called Nazareth. He sent Reverend Peter Boehler and Henry Antes to superintend the erection of the buildings, and directed that the Moravians, who had accompanied him on his voyage from Georgia, should be employed. Workmen arrived on May 30, 1741, and with their hymns of praise the Moravian history in Pennsylvania was begun. Whitefield and Boehler soon had a disagreement and the Moravian workmen were compelled to seek a new home. This they found when Bishop David Nitschman secured a similar tract at the confluence of the Monocacy Creek with the Lehigh River. Work was immediately started on the first house, and the foundation stone of the community house was laid September 28, 1741.

Count Zinzendorf arrived in Philadelphia, December 10, following. He came to America to inspect the Moravian establishments and acquaint himself with the fruits of the Brethren's labor among the Indians. He soon traveled to the settlement on the Lehigh, and on Christmas Eve the distinguished missionary gave the place the name of "Bethlehem," which has ever since been the headquarters of the Moravian Church, now known as the "Church of the United Brethren in the United States of America."

Count Zinzendorf endeavored to unite the leading men of the several denominations in Pennsylvania for evangelical work. A call for the first meeting was issued by Henry Antes, and on January 12, 1742, thirty-five persons representing the Reformed, Lutheran, Mennonite, Tunker, Hermit, and others, in all eight distinct

denominations, assembled in Antes' home in Germantown, and formed the first Synod.

The first colony of Moravians, known as the "Sea Congregation," consisting of fifty-six souls, arrived in Philadelphia, June 7, 1742. Most of this number started several days later for Bethlehem. There were not a few among this colony who became prominent leaders of the Moravian Church. Not the least of these was Christian Frederick Post, indefatigable and somewhat eccentric missionary to the Indians, and agent of the Proprietary Government. There were also John Brand-



Gemein Haus, Bethlehem, Erected 1741

millers, who made the first attempts at printing at Friedenstal in 1763-67; John Adolph Meyer, the physician of the colony, and the first regular accredited physician in the Lehigh Valley; and Samuel Powell, the bell founder, who also so successfully served as landlord of the Crown Inn. In January, 1743, was begun the erection of the first gristmill and ferry at Bethlehem.

During the session of the Moravian Synod, March, 1745, at the home of Henry Antes, he offered the use of his farm and buildings and mill in Falkner's Swamp, present Montgomery County, for the Moravians to open a boarding school for boys. On June 3 the school was opened with thirty-four scholars. The Brethren named it Mount Frederick School, when it became the first non-sectarian school in Pennsylvania.

Until 1762 Bethlehem and Nazareth were conducted as community settlements, which were called the General Economy. There were carried on about thirty trades for the benefit of the church. They even sailed several ships on the sea in which numerous colonies were carried to America. Bethlehem lay along the route of travel from New England to the South, and its Moravian inns were famous throughout the land for their hospitality. The "Sun" entertained under its roof most of the leading men of the country during the days of the stagecoach. Franklin had given us an interesting account of Bethlehem and its people. The community

houses were built on three sides of a square. Unlike the monks at Ephrata, they believed in marriage. Everything that they raised or made was given over to the church, which in turn furnished each person with food, clothes, and shelter. They educated the children and conducted a number of industries whose products gained a good reputation throughout the colonies. It was a garden and fruit trees were planted everywhere. The first water pumping plant in America was built by these Moravians in Bethlehem. It began operation June 27, 1754. A similar church village was founded prior to the Revolutionary War at Lititz.

The greatest work of these Moravians was done in educating the Indians and in converting them to Christianity. They succeeded in forming important settlements of these converts and in getting them to follow the arts and ways of the white men. One of these missions was established by Bishop David Zeisberger at Wyalusing, present Bradford County, in May, 1763. It was one of the most important missions ever established among the North American Indians, and was given the name of "Friedenshutten," meaning "Huts of Peace." The log and bark



Church at Bethlehem

houses were built along regular streets, and a church, schoolhouse, and mission house were imposing structures. Another mission was at Sheshequanink, present Ulster. The French and Indian War, and the Pontiac Conspiracy came so soon that the fruits of all their labors were in vain, as they also destroyed all that Penn and the Quakers had done. In June, 1772, Zeisberger led his Moravian Indian converts from Wyalusing to the Big Beaver, in Lawrence County. Flourishing missions were extended far and wide, with their principal station in the West at Gnadenheutten—"tents of grace"—in present Ohio, where many Indian converts

were gathered, and where nearly one hundred of them were murdered by white people in March, 1782, under the false impression that they were in league with the hostile tribes, or were British spies, or were concerned in some Indian incursions in Western Pennsylvania.

Much that we know of Indian life in Pennsylvania was recorded by the Moravian missionaries, notably by Reverend John Heckewelder, who worked chiefly among the Delaware Indians after they had been removed to the Ohio. He published his observations on their language, habits, and character. His views, which were very favorable to the Indians, have been warmly attacked and quite as warmly defended.

During the Indian wars the communism at Bethlehem was largely abandoned. The church retained as its property only a few farms, trades, and the old Sun Inn, but still controlled the land, and would sell it to none but Moravians until 1844. At that date Bethlehem was thrown open to strangers, who soon began to develop those enormous industries in the manufacture of iron and steel, which have made it one of the richest and most prosperous towns in America.

Bethlehem was the seat of a general hospital twice during the Revolutionary War. Troops were constantly passing through the town and heavy baggage and munitions of war, and General Washington's private baggage were stored here and guarded by Continental soldiers. Many houses were occupied by American troops and nearly 300 British prisoners of war. The Continental Congress found refuge here when on its flight from Philadelphia. The Single Brethren's House, now the middle building of the Moravian Seminary and College for Women, which has weathered the storms of nearly two hundred years, was twice occupied as the general hospital. More than 1,000 sick and wounded, after the defeat at Long Island, were cared for here, and after the battle of Brandywine, the sick and wounded, including General Lafayette and Colonel John Armstrong, were nursed in this hospital, as were 450 wounded in battle of Germantown. On the slope of the hill just west of Monocacy Creek are the graves of over 500 of the patriot dead. A military hospital was also established in the Brethren's House at Lititz, where for a period of eight months the sick and wounded patriots were treated by the Moravians.

The inhabitants of Bethlehem, therefore, witnessed not only the horrors and experienced the discomforts of war, but also its pomp and circumstance, for at times there were sojourning among them Generals Washington, Lafayette, Greene, Knox, Sterling, Schuyler, Gates, Sullivan, DeKalb, von Steuben, Pulaski, and Arnold, and General Charles Lee's division, in command of General Sullivan, encamped opposite the town. The population in those days was about 500, nearly all Moravians.

The Moravians were pioneers in education. One of their bishops in the Old World, John Comenius, who died in 1670, is known wherever the science of education is studied. The Moravians of Pennsylvania early opened schools. At Nazareth, Bethlehem, and Lititz, they had nurseries, where children above one or two

years of age were fed, clothed, and instructed and cared for at the expense of the brethren. Later parochial schools, with infant departments attached, displaced the nurseries. They opened a school at Germantown in 1742, and soon afterwards seminaries at Bethlehem, Nazareth, and Lititz, which became famous throughout the country, and which are flourishing institutions today. General Washington sent his wards from Virginia to the Bethlehem school. The boys' school at Nazareth has enjoyed a wide influence for much more than a century. One of the most famous of Moravian schools was founded near present Lititz, in 1747, by Reverend Schnell. The school has been continued to the present day and Linden Hall is famed for the cultural and spiritual value of the old Moravian education, combined with the best progressive ideas of the present. Other schools were established by these devout Moravians at Frederickstown, Montgomery County; Oley, Berks County; Emaus, Lehigh County; Lancaster, Muddy Creek, and Milton Grove, in Lancaster County, and in other places.

The Moravian Seminary was founded almost at the beginning of the Moravian settlement of Bethlehem. It is the second oldest girls' boarding school in the United States. "Colonial Hall," built in 1748, is the oldest structure in the group of buildings owned by the seminary. From the roof of this building it was customary in pre-Revolutionary days to play the trombone on festal occasions, or to announce the death of members. Tradition says that on one occasion during the French and Indian War, a band of hostile Indians had planned to attack the settlement, and at sunset as they lay waiting for the darkness, they heard a strange melody floating down from the sky. They had never before heard anything like it, and believing it must be the voice of the Great Spirit warning them, they held a hurried council, and silently stole away in the darkness. The custom of announcing Easter morning with the trombones is still carried on in Bethlehem.

Baptists—Pennsylvania occupies so important a place in the history of the Baptist Church in America that it might well be called the Keystone State of their polity. Here the Baptists thrived unmolested, and amply did they repay the debt, when the dark days of the Revolution came, by the unflinching support they gave to the Patriot cause.

The first church of this denomination in Pennsylvania was organized about 1684, by Reverend Thomas Dungan, of Rhode Island, at Cold Spring, near Bristol, Bucks County. This church did not prove permanent, but about three years later the second and more permanent one was organized at Pennypeck, or Lower Dublin, Philadelphia County. Reverend Mr. Henson, in his historical sermon to the Philadelphia Association of 1876, says that in 1682 there was in all Pennsylvania only one Baptist, "a little girl just come from Wales, and her name was Davies." She was "the standard-bearer of the host," now members of this numerous and prosperous denomination.

Orthodox Baptists are Calvinists in theology. They settled in groups in various counties of the southeastern part of Pennsylvania, but a few had already pushed

across the Allegheny Mountains even before the Revolutionary War. The Philadelphia Association, the oldest in America, was organized in 1707. Reverend Samuel Jones established an academy at Lower Dublin in 1766, which continued until 1795. The Baptists had a schoolhouse there as early as 1732. Haddington College, founded in 1832, led finally to the University of Lewisburg, present Bucknell University, established in 1846. The Crozer Theological Seminary is a noble monument of the liberality of the Crozers, and Temple College, founded by the late Reverend Dr. Russell H. Conwell, in 1888, has achieved true university status, and since 1907 has been known as Temple University; the present enrollment exceeds 13,000.

Episcopalians—The Church of England people formed a curious and decidedly hostile element in the early settlement of the Province. They established themselves in Philadelphia in the beginning, and almost immediately became important as a political party. The charter of Charles II provided that when twenty persons should petition for a parish of the Church of England it should be established. No attempt to do so, however, was made until 1695, when Christ Church was formed in Philadelphia.

While there may have been a few members of the Church of England in the Province before the arrival of Penn, the organization of that body had its rise in the difficulties among the Quakers which were the outcome of the controversy with George Keith. Many of those who had been converted to Quakerism in England, and with him later separated from the Meeting, returned to the religious associations of their earlier life. Never strong numerically, and not constituting a wave of immigration, the Episcopalians formed an important element in Philadelphia, and included many eminent Pennsylvanians among their numbers. Most of them remained true to the church, and some more enthusiastic members entertained the hope up to the eve of the Revolution of a State Church here in Pennsylvania, as in England. This may account in a measure for the fact that so many of the Episcopalians were Loyalists when the war for independence began. A notable exception being Bishop William White, the "Father of the American Church," who at once espoused the cause of the colonists, took the required oath of allegiance to the United States, and served as chaplain to the Continental Congress in 1777 until the removal of the seat of government to Washington in 1801.

The Episcopalians long controlled the executive functions of the government, owing to the fact that the sons of William Penn became members of the Church of England after the death of their father. They formed the basis of the Proprietary party, filled the important executive offices, and were constantly at odds against the Quaker majority, which controlled the Legislature. This contest was carried across the sea as the churchmen sent home to England reports calculated to prove that the Quakers were incapable to govern, and urged that Penn should be deprived of his charter. They favored that Pennsylvania should be a royal domain, and

among the schemes of these people was one for making Pennsylvania a Church of England colony like Virginia. It was suggested that the Three Lower Counties should be taken by the King and given to the church as a manor to support a bishop. While this scheme failed to mature, the churchmen firmly established themselves, not without a little ostentation and romance, around two institutions, Christ Church for the first fifty years, and after that around the old College of Philadelphia, now the University of Pennsylvania.

Sidney George Fisher, in his "Quaker Colonies," says: "The Reverend William Smith, a pugnacious and eloquent Scotchman, led them in many a gallant onset against the haughty tribe of Quakers, and he even suffered imprisonment in the cause. Yet in spite of all the formidable opposition, the Quakers continued to control the Province, serenely tolerating the anathemas of the learned churchmen and the fierce curses and brandished weapons of the Presbyterians and Scotch-Irish."

The Episcopal churches in Pennsylvania remained under the direction of the Bishop of London until after the close of the Revolutionary War, and it was not until 1785 that a distinct church was organized apart from the Church of England.

The history of the old Christ Church is virtually the history of the Episcopal Church in Pennsylvania for a long period. The venerable building has been the scene of so many interesting events of historical and ecclesiastical importance, and so many distinguished personages have served or worshipped in it that, apart from Independence Hall, perhaps, it may be deemed the most revered historic shrine in Philadelphia.

The Protestant Episcopal Diocese of Pennsylvania originally included the whole State. The Diocese of Pittsburgh was formed in 1865. The Diocese of Central Pennsylvania in 1871, now Bethlehem. The Diocese of Harrisburg in 1904. The Diocese of Erie in 1910. The so-called Diocese of Pennsylvania only includes the counties of Philadelphia, Delaware, Chester, and Bucks. The bishops were William White, Henry Unsick Onderdonk, Alonzo Potter, William Bacon Stevens, William Ozi Whitaker, Alexander Mackay-Smith, Philip Mercer Rhinelander, Thomas James Garland, and the present (1933) incumbent, Francis Marion Taitt.

The Reformed Church—During the reign of Queen Anne, in 1790, there was a great exodus of Germans from the Palatinate and the Upper Rhine to London. From there they were sent for the most part to New York, but not liking that country or its government, they came down the Susquehanna River into Pennsylvania and settled in the region which has later become Berks County.

These "church people," as they were called did not begin to arrive in considerable numbers until after 1725. They were followers of Zwingli and Calvin. Among the English-speaking people the followers of the latter were called Calvinists, Puritans, and Presbyterians, but in Germany, Holland, and Switzerland the general term "Reformed" was used. Many of these religionists were uneducated, and, at first, completely without church organization, but soon gathered themselves into congre-

gations which were further strengthened by the labors of Reverend Michael Schlatter.

The first great influx of the Reformed came in 1727, when about four thousand arrived and settled on the Skippack Creek, under the leadership of Reverend George Weiss. These took but little interest in the government of Pennsylvania, but settled in groups through the Province. The first congregation of the Reformed Church in Pennsylvania is thought to have been formed in 1726 by John Philip Boehm, at Whitpain Township, Philadelphia, but now Montgomery County. Boehm was a schoolmaster, not then licensed to preach, but there being no regular minister he felt called upon to lead in divine service according to the best of his ability. A church was organized at Whitpain in 1740, and Boehm remained in charge until his death, May 1, 1749. They also had worship at Old Goshenhoppen, New Goshenhoppen, Falkner Swamp, Oley, and other places. The Reformed Church in Germantown was begun by John Bechtel in 1726, and the edifice was built in 1733. Later, in 1747, Schlatter organized the Reformed Church in America, as a part of the Synod of Holland. They have been an independent sect since 1793.

The Lutherans—The Lutherans were the last to migrate but were much more numerous than the Reformed. In the year 1708 and 1709 more than thirty thousand Lutherans came to America, and by 1730 they were arriving in even greater numbers. Like the Reformed, they were scattered over the Province, and the problem of churches and schools for the better preservation of the faith became acute. There were three imperfectly organized Lutheran congregations in Pennsylvania, located at New Hanover, New Providence, present Trappe, and Philadelphia. In 1733 delegates had been sent to England, Holland, and Germany to solicit funds for the erection of churches and schoolhouses, and to plead for a pastor for themselves. These delegates met with success, and a missionary was called, September 6, 1741, when in answer to these earnest pleas and those of other orthodox Lutherans in Philadelphia, Dr. Franke, of Halle, Germany, was able to persuade Reverend Henry Melchoir Muhlenberg to come to this country.

The life of the founder of the Lutheran Church in America is interesting. He was born at Eimbeck, Hanover, Germany, September 6, 1711, and on his thirtieth birthday accepted the call which was to come to the New World. He was the son of Nicholas Melchoir and Anna Maria Muhlenberg. He entered the University of Göttingen in 1735, where he distinguished himself in the classics and earned a yearly stipend toward further education. In 1737 he began his theological course, which he finished in Halle; ordained in 1739; and he was serving congregations of German Lutherans in Upper Silesia when called to the Pennsylvania field. In the beginning of the following year Muhlenberg began the journey to his new field of labor. He spent sometime in London, and on June 13, 1742, embarked there on a packet that was sailing for Georgia with provisions for Governor Oglethorpe's colony. During the voyage he preached to the passengers in the English

language. He reached Philadelphia on November 25 and entered at once upon his great work.

His field of labor soon extended to New York, New Jersey, and Maryland, and included supervision of all Lutheran congregations in Eastern Pennsylvania from York to Tulpehocken to Philadelphia. He was able to preach in German, English, Dutch, and Latin. He induced young men and promising Lutheran clergymen to



Rev. Henry Melchoir Muhlenberg

come to America, and with their arrival the field was enlarged, until it soon extended to Georgia on the south and up along the Hudson, all under his care. As early as 1748 he brought together in a joint synod all the Lutheran churches and pastors, and thus laid the foundation for the organic structure of Lutheranism which America today presents.

Muhlenberg made his home at Trappe, Montgomery County, and resided there throughout his life. He married Anna, daughter of Colonel Conrad Weiser, April 23, 1745; they were the parents of eleven children. During the Revolutionary War he endured many trials when he espoused the Patriot cause, and exerted great influence in the cause for liberty. His life was several times in jeopardy. In 1784 the University of Pennsylvania conferred upon him the degree of Doctor of Divinity. He died October 7, 1787.

The first Lutheran church built at Trappe still stands, and in it the centennial anniversary of the death of Dr. Muhlenberg, the great divine, was observed October 7, 1887. His body lies in the old graveyard.



Trappe Church

Of his children, John Peter Gabriel Muhlenberg was a minister, a distinguished major general in the Continental Army, and a member of the first Continental Congress; Frederick Augustus Conrad Muhlenberg was also a member of Continental Congress and Speaker of the First and Third Congresses; and Gottilf Henry Ernest Muhlenberg was a noted clergyman and a distinguished botanist. Many members of this noted family are still adding lustre to the glory it has ever maintained in American annals.

Scotch-Irish and Presbyterians—The Scotch-Irish and Presbyterians formed the third great body of immigrants to Pennsylvania. They were people from Scotland who had gone to Ireland to occupy the lands taken from the Irish rebels by Queen Elizabeth, James I, and Charles I. In religion they were Presbyterians and by occupation farmers. In English history these people are usually called Ulstermen. They made a heroic defense of Londonderry, and in modern times they as boldly resisted home rule in Ireland. They were more thrifty and industrious than the native Irish, with whom they were in a more or less constant state of war. Such a rugged schooling in Ireland made them aggressive and hardy frontiersmen in Pennsylvania.

These Ulstermen came to the Province later than the first German sects, and unlike them, their religion did not resemble that of the Quakers. They were out of sympathy with the Quakers except in the one point of freedom of worship. The Quakers associated the Presbyterians with the Massachusetts Puritans, who so cruelly persecuted their people in New England. The Scotch-Irish in turn had little respect for the mild and passive behavior of the Quaker. Fisher, in his "Making of Pennsylvania," says: "It would be hard to conceive of a greater contrast in thought and feeling than was presented in these Presbyterians living in the same community with the Quakers. The eagle and the dove, the lamb and the lion, suggest themselves at once as proper similes. But, curiously enough, in this instance the dove was in power, and all through the Colonial period kept the eagle in control. The dove was not inclined to be at all tyrannical to her enemy, but at the same time her love of peace was very exasperating to the men who were passionately fond of war." Yet these Scotch-Irish were drawn to Pennsylvania by its fame for religious liberty and the fertility of its soil.

This important element in the population began to emigrate to America in about 1700, and the movement lasted nearly fifty years. Those who first came settled in the lower part of Chester and in Lancaster counties. It appears to have been the dream of these Ulstermen that they could find a fertile soil where they would not have to come in contact with Irish "papists," nor the Church of England people. They were not any too fond of the Germans they found in Pennsylvania. Indeed, they were so clannish that for a time they entertained ideas of forming a separate province on the Susquehanna River.

About 1720 the settlement containing the famous Log College, founded by Reverend William Tennent, in 1726, was made on the Neshaminy Creek, Bucks County. Another body settled at the Forks of the Delaware, at present Easton, while others located themselves at Donegal, in Lancaster County, and at Paxtang, Derry, and Hanover, in present Dauphin County. But the greater number of the Scotch-Irish settled west of the Susquehanna River, in the Cumberland Valley, where are now flourishing towns of Carlisle, Chambersburg, Gettysburg, and York.

They caused no end of trouble by occupying land not purchased from the Proprietaries, and they experienced further difficulties when they moved onto lands

occupied by the Indians. The aggressive spirits were also in such frequent collisions with the Germans that the officials of the Province encouraged them to locate in the eastern parts and the Scotch-Irish to push farther westward. This was an agreeable arrangement for the Scotch-Irish proved to be the very men to face that rugged wilderness and resist the attacks of barbarous foes and wild beasts. Their conduct toward the Indians was as warlike as that of the Quakers had been peaceful.

The terrible experiences of their forefathers in Ireland was a school for frontier life of a more aggressive nature than had existed while the Quakers and the Germans faced the Indians. The latter had now been pushed farther and farther westward by the tidal wave of immigration, and peace was much more difficult to maintain. The Scotch-Irish were essentially frontier settlers, and their natural characteristics, and the distance of their farms and settlements from the more developed eastern parts of the Province led them, in many instances, to take the law into their own hands. They settled on the spot which best suited their purposes. They were deemed cruel, vicious, bigoted, and intolerant by their enemies, but their friends believed them to be courageous to a fault, high-spirited, and sincerely religious. There is no denying the fact that they were rough and vigorous, or that they settled their differences with fist or gun. They were ever willing to undergo the hardships and privations of frontier life for the freedom and excitement that it offered. Sargent, in his "Journal of Braddock's Expedition," says of them: "They were a hardy, hot-headed race, excitable in temper, unrestrainable in passion, invincible in prejudice. Their hand opened as impetuously to a friend as it clinched against an enemy. They loathed the Pope as sincerely as they venerated Calvin and Knox, and they did not particularly respect the Quakers. If often rude and lawless, it was partly the fault of their position. They hated the Indians while they despised him, and it did not seem, in their dealings with the race, as though there were any sentiments of honor or magnanimity in their bosoms that could hold sway against the furious tide of passionate, blind resentment. Impatient of restraint, rebellious against everything that in their eyes bore the semblance of injustice, we find these men readiest among the ready on the battlefields of the Revolution. If they had faults, a lack of patriotism or courage was not among the number."

When the French and Indian War broke out, in 1755, the Scotch-Irish settlers on the frontiers of Pennsylvania maintained a constant warfare with the Indians and faced many a fatal attack for the next forty years, and for some of which they had only themselves to blame. This disturbance of the peace policy caused the Quakers to form a dislike for them. Yet after the purchase of November 5, 1768, when the land west of the Allegheny Mountains was opened for settlement, the Scotch-Irish gladly availed themselves of the opportunity to move still farther westward into the pathless forests, where they became the first actual settlers of Western Pennsylvania.

These were the first people in America to develop the use of rifles which in those early days were largely manufactured in Pennsylvania, at Lancaster, Easton, and Philadelphia. Some of these have been preserved and are truly most handsome weapons. They have long and accurate barrels, graceful stocks of the best wood and prettiest designs, and often with quaint brass, silver, or gold mountings. Frequently some are seen which are artistically inlaid, this work usually having been done by the owner himself. Best of all these sturdy frontiersmen knew how to use the rifle on all occasions; no others have ever excelled them.

It is unfortunately true that the Scotch-Irish allowed their rough, vigorous, and independent qualities to lead them into excesses at times; yet these very characteristics made them a power in the land. When the Revolution came they were ready and eager for the struggle, and to a man adopted the American cause. They entered the war with their whole spirit, and fought as they had in every contest which involved liberty and independence. Many of the ablest officers came from the settlements of these brave and fearless frontiersmen. The French War had been an excellent school for drilling the Continental soldiers, but none were better drilled than the Scotch-Irish of Pennsylvania—a fact well known to the Continental Congress in 1775, and these same Scotch-Irish dominated the politics of Pennsylvania during that eventful period.

Always leaders in education they founded Dickinson College, at Carlisle, in 1783, and later Allegheny College, at Meadville, and Washington and Jefferson, at Washington.

Among the governors of Pennsylvania are to be found these of Scotch-Irish descent: Johnston, Pollock, Curtin, Geary, and Pattison, and three distinguished Chief Justices of the Supreme Court, McKean, Gibson, and Black.

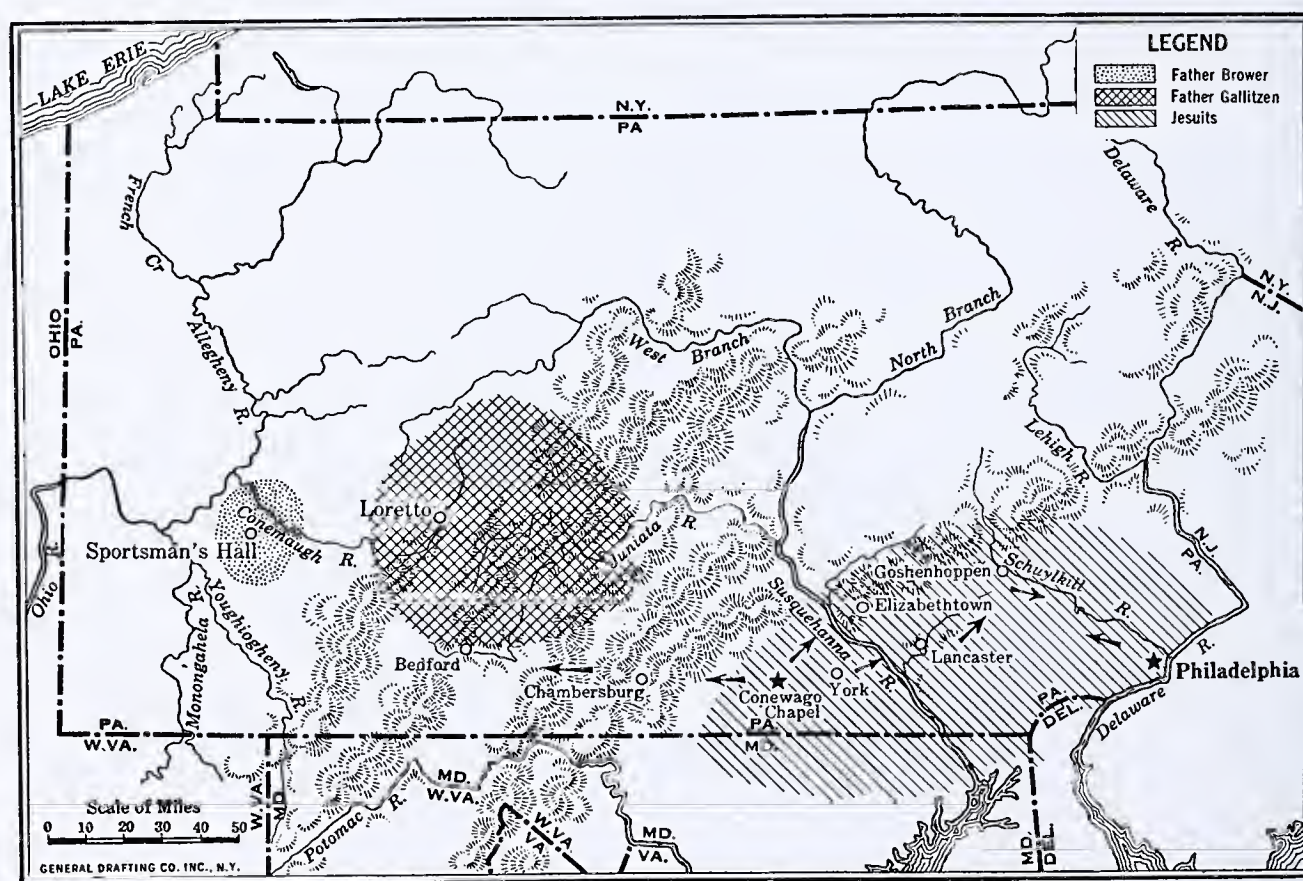
The Puritans—The invasion of the Wyoming Valley by the settlers from Connecticut and other parts of New England is of interest to Pennsylvanians from the point of view of religious as well as political history. These Puritans should be given a place apart from the other Presbyterians. Fisher, in his "Making of Pennsylvania," says of these settlers: "They were all Puritans of the sturdiest stock, aggressive, enterprising, and independent. They occupied the land by squatter sovereignty, and with about the same feeling that inspired their fellow-Calvinists, the Scotch-Irish, who planted themselves on the Pennsylvania frontier. It seemed like a pleasant place; they wanted it. They were the saints, and the saints, as we know, shall inherit the earth."

When the Proprietary Government tried to expel these intruders there followed many years of strife, and sometimes actual warfare, which is known in Pennsylvania history as the Connecticut-Pennsylvania Controversy, or the Pennamite-Yankee War. After the Revolutionary War the legal struggle was renewed, which was finally settled by the action of the Continental Congress, when the territory

was left a part of Pennsylvania, but the inhabitants were largely Connecticut Presbyterians.

Catholics—The first Roman Catholics to reach Pennsylvania came with LaSalle and other French explorers, but they only passed through on their voyages from Canada to the Mississippi Valley and the Gulf of Mexico. The first known reference to the presence of a priest and the celebration of mass in Philadelphia is found in a letter written by Reverend John Talbot, a nonjuring Episcopal minister, to the secretary of the Society for Propagating the Gospel in Foreign Parts, dated January 10, 1707, in which he advises the London official that there is a "Popish Mass at Philadelphia," and also adds: "I thought that the Quakers would be the first to let it in, particularly Mr. Penn, for, if he has any religion 'tis that, but thus to tolerate all without control is the way to have none at all."

The erection of the first Catholic chapel in Philadelphia attracted the attention of the authorities, and at the session of the Provincial Council, July 25, 1734, Governor Patrick Gordon informed that body that he was under no small concern to hear that a house, lately built on Walnut Street, in the city, had been set apart for the exercise of the Roman Catholic religion, commonly called the "Romish Chapel," where several persons resorted on Sundays to hear mass openly celebrated by a Popish priest." He feared the public exercise of that religion to be



Catholic Settlements in Pennsylvania

contrary to the laws of England. The Council postponed action for a week, when the matter was left to the Governor to seek advice from the home government.

According to other authorities the Catholics celebrated Mass in Philadelphia in 1707. A chapel was erected near Nicetown in 1729.

As late as 1844 many of the Catholic churches in Philadelphia were burned by mobs.

Reverend Harold E. Keller, of Harrisburg, in his recently published "History of Pennsylvania," gives an excellent account of the part Catholics played in the settlement and growth of our Commonwealth, in which he says:

The Reverend John Pierron, of Canada, was the first priest to visit Pennsylvania, in 1673 or 1674, and the first resident of Philadelphia of the Roman Catholic faith came here with Pastorius in 1683. Two years later J. Gray, of London, came to the Province, but changed his name to John Tatham. He was a great friend of William Penn, and was appointed Governor of New Jersey, but could not take the oath of allegiance to the King and Queen because of his religion.

In 1730 the Reverend John Wheaton, or Greateon, as he is sometimes called, a Jesuit Father, founded the first parish, and the first church was begun in 1733. Between 1729 and 1730 over 12,000 Irish entered the Province from the south of Ireland, and from 1700 to 1750 about 100,000 Presbyterians from the north of Ireland.

As early as 1700 Catholic settlers from Maryland took up lands along the Codorus Creek, in what is now York County. In January, 1726, they obtained from Charles Calvert, the fourth Lord Baltimore, a grant of 10,000 acres where the towns of Hanover and McSherrystown are now situated. English Catholics from Maryland soon occupied some of the land, and they were joined later by Germans and Irish, who crossed the Susquehanna.

The same Father Wheaton took care of the Catholics of this part of Pennsylvania, as well as those of Philadelphia. Shortly after his arrival in Maryland he came to this spot to say mass and give instructions to the Indians, as well as the white inhabitants. The Conewago Valley was the route used by the Jesuit Missionaries on their way to Philadelphia, with stops at their missions in Lancaster and Goshenhoppen. After Colonel Robert Owings arrived, about 1733, mass was said at his house and a cemetery laid out. In 1741 a log church was built on the present site of Conewago chapel. Father Mathias Manners was the first resident priest.

In only two colonies were the Catholics tolerated, in Maryland, the one established by them, and in the Quaker colony of Pennsylvania. In the French and Indian wars one of the easiest ways to raise troops in the colonies to fight the French was to say that France was going to make the whole country Catholic. Just about the time of the Revolution the British Parliament passed an act, known as the "Quebec Act," granting to the Catholics of Canada the right to practice their religion. Catholic Spain proved an aid, and of course the best help came from France, which made an alliance with the colonists. The French fleet and French soldiers all had Catholic chaplains.

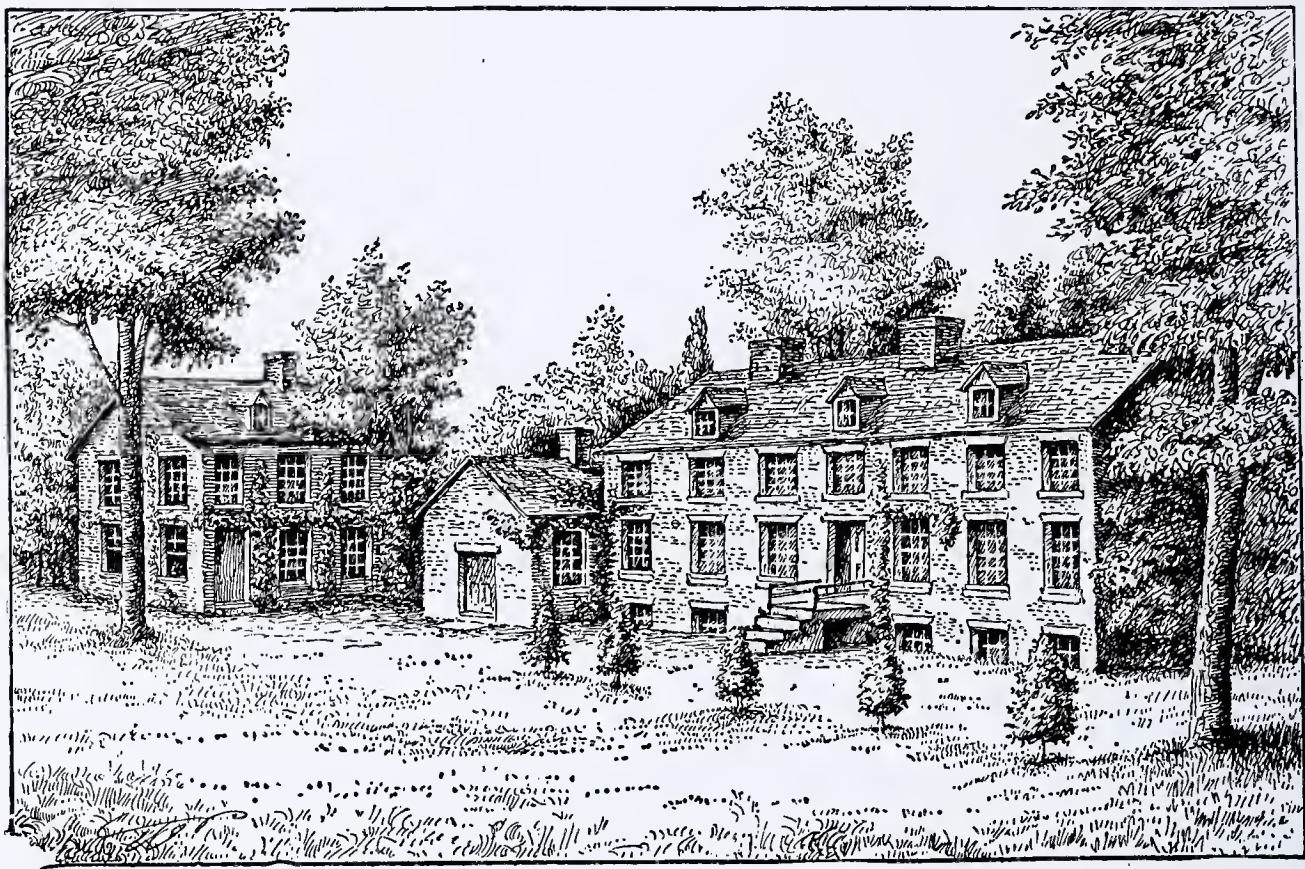
Among the leaders of the Revolution who were Catholics were Commodore Barry, General Stephen Moylan, muster general and colonel of the Light Horse Dragoons; Colonel John Fitzgerald, aide-de-camp and secretary to General Washington; and Charles Carroll, of Carrollton, signer of the Declaration of Independence. Father Gibaut, the French missionary, gave assistance in the West. Thomas Fitzsimons and Daniel Carroll, were members of the Constitutional Convention.

In speaking of the growth of the church, Reverend Keller says:

From the Catholic centers established early in the 18th century at Conewago, Goshenhoppen, and Philadelphia, the Church spread wherever Catholic settlers raised their cabins. About the same time a log church was built at Conewago (1741), one was erected at Lancaster. Mass houses were chosen at various places, such as York, Columbia, and elsewhere. Then the Jesuit Fathers began to visit the towns along the great east-west highway such as Carlisle, Chambersburg, and Bedford, establishing churches there when the number of faithful became large enough to warrant that action.

In 1776 Joseph Smith purchased a stone house at York, which he presented to the small Catholic congregation as a place of worship. In 1787 the Reverend James Pellenz erected the present stone chapel of Conewago, and soon afterwards built churches at Chambersburg and Elizabethtown.

In Philadelphia in addition to the Catholic chapel of St. Joseph's, St. Mary's



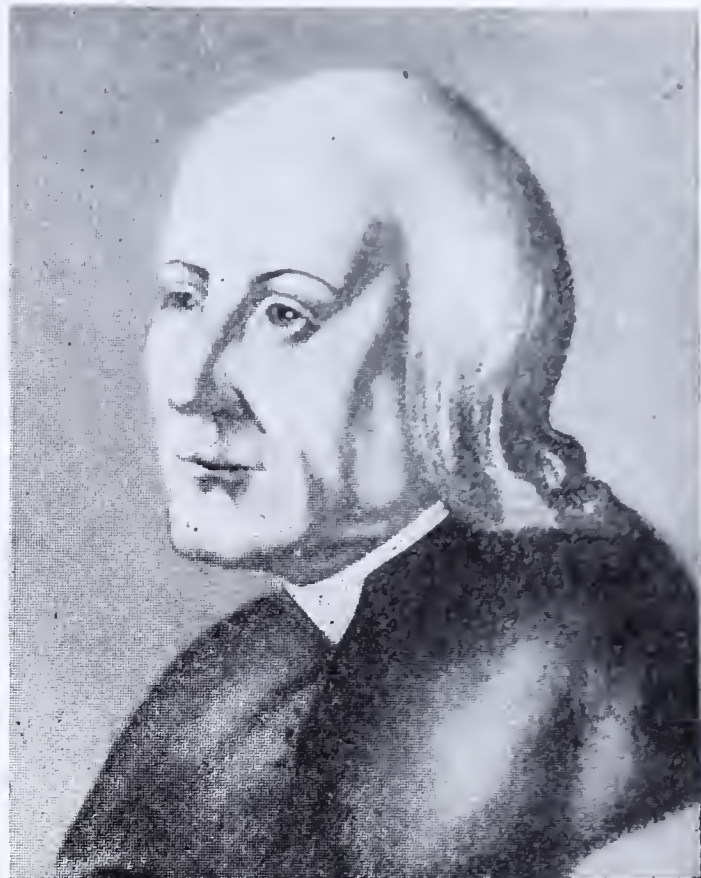
St. Joseph's Chapel, Philadelphia

Church had been established and Holy Trinity for the German speaking of the population. Church of St. Augustine was erected there in 1801.

As the settlers who first went to Pittsburgh and vicinity were strong Calvinists, few Catholics went there in the years after its capture from the French. In 1784 enough had arrived to cause them to send Felix Hughes to the Very Reverend John Carroll, who was in charge of the clergy in the United States, asking that a priest be sent to them. Father Paul, a Carmelite, spent some time there in 1785, and in 1787 Reverend Charles Whalan visited them.

In March, 1789, the first log church was erected in Greensburg. St. Vincent's Archabbey and College, near Greensburg, became the "Cradle of Catholicity" in Western Pennsylvania, in 1790.

About this time there came to America one of the best and greatest Catholic men Pennsylvania has ever known, Prince Demetrius Gallitzen, the son of Prince Gallitzen, of Russia, and Countess Amalie, only daughter of the Prussian Field Marshal Von Schmettan. At his birth, in 1770, at The Hague, he was baptized in the Greek Orthodox faith and brought up in it. Young Demetrius Augustine did not become a Catholic until seventeen years of age. After his education was completed his parents decided to send him to America for two years' travel. He embarked from Holland in August, 1792, and landed at Baltimore in October. To avoid the inconvenience and expense of traveling as a Russian prince he assumed the name of "Augustine Smith."



Prince Demetrius Gallitzen

The needs of the Church in America so impressed him that he resolved to devote his life and fortune to the salvation of souls in this country. With the approval of Bishop Carroll he entered St. Mary's Seminary, Baltimore, and on March 18, 1795, was ordained priest. He was the first to

receive in the United States all the orders from tonsure to priesthood. Appointed missionary to Pennsylvania, Western Maryland, and part of Virginia, for four years he lived at Conewago, when he was not traveling in his missionary territory.

Captain Michael McGuire, a soldier in the Revolutionary Army, had purchased 1,200 acres on the summit of the Alleghenies in 1788, and established his residence there. At his death, in 1793, he left to Bishop Carroll 400 acres in trust for a resident clergyman, whom he hoped would be appointed to take care of the Catholics.

Prince Gallitzen was delighted with the place and decided to form a settlement. Receiving permission of Bishop Carroll, in 1799, in the summer of that year he commenced his career as the pioneer priest of the Alleghenies. His first church, built of logs, was ready by Christmas.

To attract settlers, he bought additional land, built sawmills, gristmills, and tanneries at his own expense, and in all spent almost \$150,000 of his own money.

The Russian Government disinherited him, and as he had gone in debt on the expectation of receiving more money from his family, he had to appeal to the public. Bishop Carroll and Cardinal Cappellari, who afterward became Pope Gregory XVI, were among the many contributors to his debt fund.

Forty-one years were spent among his beloved Alleghenies, when he died May 6, 1840. No hardy pioneer who ever came to Penn's Woods lived a more rugged life, suffered greater hardships, or fought a more valiant fight than this soldier of Christ and Apostle of the Alleghenies.

The two towns, Loretto and Gallitzen, in Cambria County, remind their inhabitants of this great Russian nobleman.

Rev. Michael Egan became the first Bishop of Philadelphia, when it was set up as a new diocese in 1808. This diocese was made up of the entire State, Delaware, and the western and southern parts of New Jersey. In 1843 Pennsylvania was divided and Rt. Rev. Michael O'Conner was made Bishop at Pittsburgh. The Erie Diocese was created in 1853. The most recent diocese was created at Altoona, in 1930, with Reverend Eugene A. Garvey the Bishop.

In 1921 the Most Reverend Denis J. Dougherty, Archbishop of Philadelphia, was made a Cardinal, the first to bring that high honor to his church in Pennsylvania.



Prince Gallitzen Meets Another Catholic Missionary

The Catholics have always been keenly interested in education, with parochial schools in Philadelphia as early as 1782, and others at Goshenhoppen, Lancaster, Hanover, and Westmoreland County prior to 1787. The school at Loretto was begun in 1800, one at Harrisburg in 1828, McSherrystown in 1830, and Pottsville in 1836. Villanova College was founded in 1842, St. Vincent's College in 1846, those at Loretto and St. Francis in 1847, and St. Joseph's College in 1851.

In recent years the membership of the church has much increased in numbers and influence, and many of the most illustrious Pennsylvanians are adherents of this faith.

The Hebrews—The first Israelites in Pennsylvania are believed to have been descendants of those families expelled from Spain by the well-known edict of Ferdinand and Isabella, but little concerning the Jewish people and church in Pennsylvania is to be found in any records previous to the Revolution.

There is a tradition, however, that there were Jews here before the landing of William Penn. In January, 1726, a special act was passed to allow Arnold Bamberger and others to hold lands, and to engage in trade and commerce. In 1738 the Proprietaries sold land to Nathan Levy for a family burying-ground, which tract

passed finally into the hands of the first Jewish congregation, which, in 1747, was established as "Mikve Israel" ("Hope of Israel"), though it was long before they were able to build a synagogue. The first such edifice was dedicated September 13, 1782.

Samuel Kelmer, the Philadelphia printer and publisher of the "Pennsylvania Gazette," gave Benjamin Franklin employment in 1723. When the non-importation resolution was adopted on October 25, 1765, it was signed by the leading merchants and citizens of Philadelphia. Among these signers protesting against the infamous stamp act were: Benjamin Levy, Sampson Levy, Joseph Jacobs, David Franks, Michael Gratz, Barnard Gratz, and Moses Mordecai—all Jews. Haym Salomon, the Polish Jew, was a patriotic banker in Philadelphia, who advanced much money to help finance the cause of independence. Simon Gratz was one of the founders of the Pennsylvania Academy of Fine Arts, and his brother, Benjamin, was a well-known Philadelphia lawyer, who served in the American Army in the War of 1812. Benjamin Nones was a French Jew, who came to Philadelphia in 1777, and served in the Patriot Army under Count Pulaski, and afterward on the staff of both Generals Washington and Lafayette. Israel Jacobs served in the Provincial Assembly in 1771, and as a member of Congress, 1791-93. Benjamin Cohen was Attorney General and member Provincial Council of Pennsylvania as early as 1755. Benjamin Van Leer was a leading physician. David Franks was an exception to the rule that the Jews espoused the American cause.

Rebecca Gratz was the original of Rebekah in Sir Walter Scott's "Ivanhoe." Rebecca Franks was a particularly brilliant woman. It is told of her that at a certain ball General Sir Henry Clinton requested the band to play "Britons, Strike Home!" Instantly Rebecca Franks exclaimed: "The commander-in-chief has made a mistake; he meant to say 'Britons, Go Home!'"

Bishops—Hugh Charles Boyle, born in Johnstown, Roman Catholic, Pittsburgh, since 1921; Andrew James Brennan, born in Towanda, Roman Catholic, Richmond, Virginia, since 1926; Sylvanus C. Breyfogel, born in Reading, Evangelical Church, since 1891; Charles Wesley Burns, born in Willow Grove, Methodist Episcopal Church, since 1920; Harry Roberts Carson, born in Norristown, Protestant Episcopal, Hayti, since 1923; Edwin Makin Cross, born in Philadelphia, Protestant Episcopal, Spokane, since 1924; Frederick Bohn Fisher, born in Greencastle, Methodist Episcopal, India, since 1920; Joseph Marshall Francis, born in Eaglesmere, Protestant Episcopal, Indiana, 1899; Daniel James Gercke, born in Holmesburg, Roman Catholic, Arizona, since 1923; Thomas Joseph Walsh, born in Butler County, Roman Catholic, Newark, New Jersey, 1918; Cyrus Jeffries Kephart, born in Clearfield, United Brethren, Ohio, now Nebraska, since 1913; Charles Edward Locke, born in Pittsburgh, Philippine Islands, since 1900; Charles Bayard Mitchell, born in Allegheny City, Methodist Episcopal, since 1916; William P. Remington, born in Philadelphia, Protestant Episcopal, Oregon, since 1913;

Edward Rondthaler, born in Northampton, Moravian, North Carolina, since 1891; Anthony J. Schuler, born in St. Marys, Roman Catholic, Texas, since 1915; Harry L. Smith, born in Indiana, Congregationalist, 1920; Arthur Raymond Clippinger, born in Franklin County, United Brethren, Ohio, since 1921; Frank W. Creighton, born in Philadelphia, Protestant Episcopal, Mexico, since 1926; William Proctor Remington, born in Philadelphia, Protestant Episcopal, Oregon, since 1923; Peter C. Danner, born in Pittsburgh, Vicar General and Chancellor, Roman Catholic, Pittsburgh, since 1921; Thomas Frederick Davies, born in Philadelphia, Protestant Episcopal, Massachusetts, since 1927; Dennis J. Dougherty, Philadelphia, Cardinal, Roman Catholic, since March, 1921; John Mark Gannon, born in Erie, Roman Catholic, Erie, since 1920; James DeWolf Perry, born in Germantown, Protestant Episcopal, Rhode Island, 1911, Primate Protestant Episcopal Church in America since 1930; Lester Smith, born in Indiana, Methodist Episcopal, Tennessee, since 1924; Wilson Reiff Stearly, born in Philadelphia, Protestant Episcopal, Newark, New Jersey, since 1927; Boyd Vincent, born in Erie, Protestant Episcopal, Cincinnati, Ohio, 1899-1929; William Walter Webb, born in Germantown, Protestant Episcopal, Milwaukee, since 1906; Frank Elmer Wilson, born in Kittanning, Protestant Episcopal, Wisconsin, since 1929.

Presbyterian—First Presbytery of the Presbyterian Church in the United States was formed in Philadelphia in 1705. It was composed of seven ministers, and included churches in Pennsylvania, Maryland, Delaware, and the eastern shore of Virginia.

Mennonite—The first Mennonite Church in America was erected in Germantown, and the first service held therein May 23, 1708.

Dunker—The first Dunkard (Dunker) Church in America was formed in Germantown, December 25, 1723. They celebrated the first love feast the same evening.

Protestant Episcopal—The first General Convention of the Protestant Episcopal Church in the United States was held in Christ Church, Philadelphia, September 27 to October 7, 1785. Delegates were in attendance from seven States, and at this convention the Church in America was organized and the necessary changes made in the prayer book for the new Nation. Rev. William White, D. D., of Philadelphia, was president of the convention.

Catholic—The first Roman Catholic Church for Germans was organized in Philadelphia in 1787. Articles of incorporation were granted October 4, 1788.

African Methodist Episcopal—The Free African Society was founded April 12, 1788, by Absalom Jones and Richard Allen, two Negro clergymen of Philadelphia. The African Church, first in America exclusively for and controlled

by Negroes, was built by this society, July 17, 1794, and incorporated March 28, 1796.

Sunday School Union—American Sunday School Union, the first in America, was founded in Philadelphia in 1791. Had its germ in the First Day Society, which led to the formation of the Philadelphia Sunday and Adult School Union, in 1817, which later united with similar societies and changed its name to its present title in 1824.

Bible Society—The first Bible Society in America was instituted December 12, 1808, and incorporated January 30, 1810, as the "Bible Society of Philadelphia." Its corporate name was changed March 7, 1840, to the "Pennsylvania Bible Society."

Seamen's Church—The first church in the world for seamen was erected in Philadelphia about 1820, called "Mariner's Bethel."

CHAPTER IV.

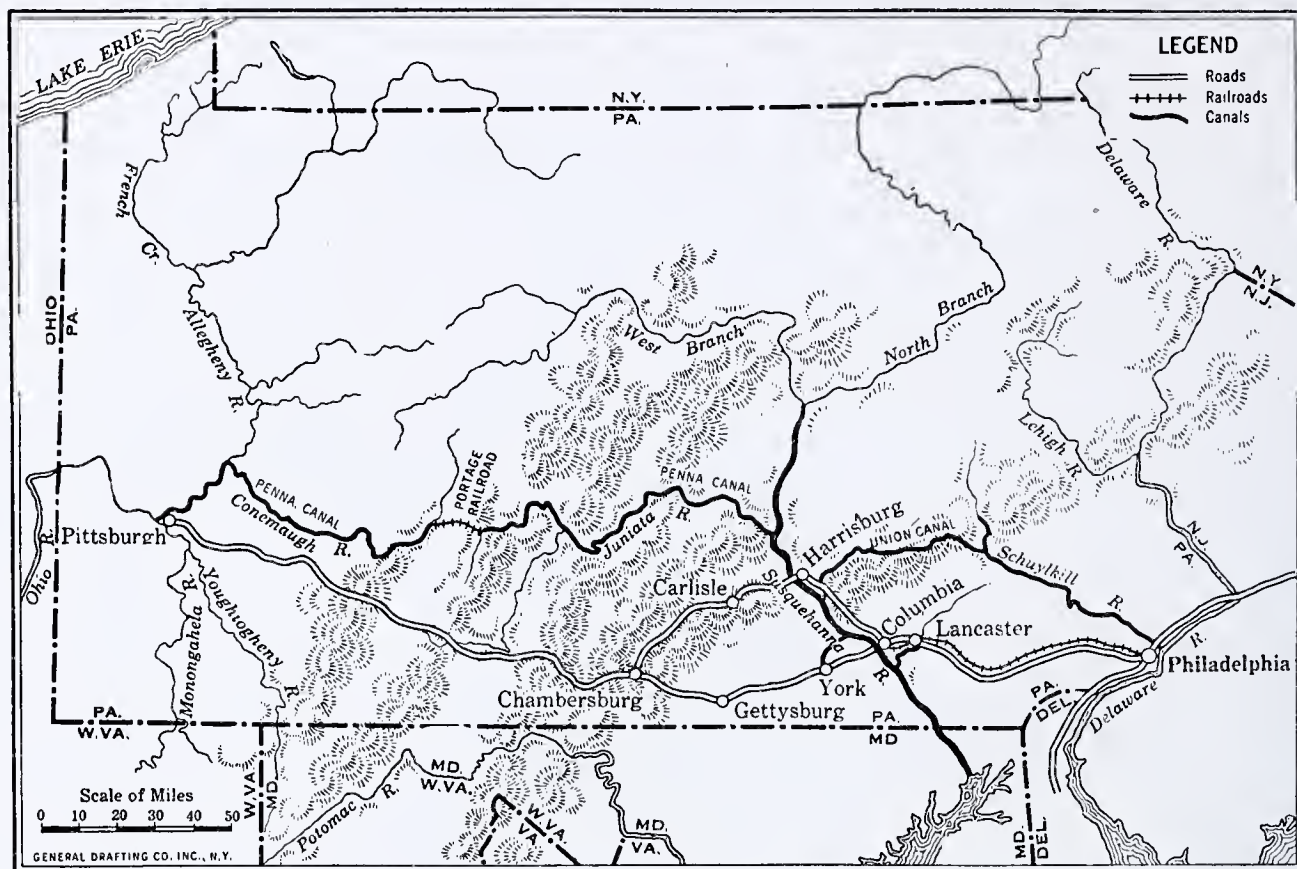
TRANSPORTATION.

The problem of transportation is one that has taxed the ingenuity and resources of mankind from the earliest recorded history. As man progressed in civilization, the interchange of commodities and products between the different countries, and consequent intercommunication, became necessities which had to be met. During these early periods, roads were almost unknown, the tracks for trade being those of Nature alone; and it was left for the chieftains of a later time—the Greeks, the Romans, the Carthaginians—to prepare ways for the the movement of their legions and supplies, which were the first steps in improvements that the nineteenth century did so much to perfect.

In a recent address, Mr. Leonor F. Loree, president of the Delaware and Hudson Company, opened with this interesting statement: "Transportation is the instrument with which man overcomes the limitations of his physical environment. Whether he finds it necessary to move articles over wide stretches of water, or land, or over the heights of mountains, his commerce is by transportation. Curiously enough, all the methods to which he has resorted may be found still in use in various parts of the world. Trains of porters are engaged in Africa, each man carrying a pack of 65 pounds on his back and averaging 15 miles per day, or in a year 152 ton-miles. The pack-horse can move 780 ton-miles, and the horse, when attached to a wagon, will move on the highway 6,240 ton-miles. The modern high-powered locomotive on a railroad of low grade will move about seventy million ton-miles annually, and the large type of lake steamers engaged in the transportation of ore, in the season of open navigation of about seven months, will move three hundred and fifty million ton-miles. This enormous increase in service over the naked achievement of man alone by using the most approved appliances of the day is one of the potent aids that have enabled him to rise from a condition of savagery to his high place in our industrial civilization."

Even before the human race inhabited what we now know as America wild animals were here and they became the originators of our roads. The animals beat down paths in going to and from water, which grew more defined as they were regularly used. Then came the Indians, who naturally followed these beaten paths, but as their need was greater, and to go from place to place was necessary, they marked their routes by cutting the bark of the trees and setting up monuments of stones. The trappers followed the Indians, those eager to till the soil followed the trappers, when the trails became bridle paths, and then the road, made by chopping away the trees to a width of fifteen or twenty feet.

The North American Indian had no horses. The crude means of carrying burdens on the back by various strappings was the only mode known by savages for overland transportation. An early explorer said if America had horses and kine and were peopled with English, no realm in Christendom could be compared with it. When the Indians traveled they moved by water if their purpose made it possible. For their land travel they created paths leading from one stream to another. They had a wonderful faculty for establishing routes that were the best that could be chosen. An Indian overland trail always led the traveler to his destination in less time and with fewer physical obstacles than any other course



Early Routes of Travel

between the two points which it connected. These trails were from twelve to eighteen inches in width, and frequently were worn a foot or more deep by generations of soft moccasins. Along such native highways the trained runners of the Indians are believed to have covered almost a hundred miles between sunrise and sunset. The Indian strapped two long poles to a dog, and between the ends, which dragged behind a dog like harness, the cargo was carried. It was tied in a bundle, then to two stout sticks which formed a frame work to support it. This contrivance was called a travois, or drag. Later horses were used in the same manner as the dogs. If an accurate map of Pennsylvania should have the railroads marked by heavy colored lines, it would be a fairly good map of the early Indian trails through "Penn's Woods." The railroad engineers did not merely follow the routes of the aborigines because of their known paths, but because these men of the forest chose most unerringly the most practicable route to their objective point, and it is but natural that our main arteries of travel today should so nearly coincide with these primitive Indian trails.

The earliest colonists walked as did their predecessors, the Indians, on their own stout legs, when they traveled by land. We find even the provincial governors of Pennsylvania and the other early colonists walking off sturdily into the forests; crossing the rivers and smaller streams on fallen trees; and sometimes being carried across "pick-a-back" by vigorous Indian guides. Yet those early Americans were commencing the conquest, though they did not know it. Each new farm established a little farther on, each new child born, helped toward the far-distant victory; but their chief contribution to the contest in which nature was at last to be defeated by man's demand for movement in speed and comfort lay in a gradual change in the character of the people themselves. As generation after generation slipped by, the separation of related families and an increase in the petty business affairs of the population multiplied the small journeys between different settlements and colonies. The time of the individual man became more valuable. The restlessness and hurry of the modern American, his desire for speed and a short-cut to his destination, found its small beginning. Gradually also, the attitude of the people toward the wilderness changed. It still remained—as do its present fragments—a thing of awe, but it was better comprehended and less feared.

By the time the several English colonies had found a firm foothold along the Atlantic Coast there were five localities from which radiated the first travel movements of the country. They were the Chesapeake Bay region; Eastern Massachusetts; New York Bay and Hudson River; the Connecticut River Valley and Long Island Sound; and Delaware Bay and the Delaware and Susquehanna rivers. The three most important of these were the Chesapeake, New York, and Delaware bays. Travel by land was limited, hazardous and inconvenient. Travel by boat was greatly preferred, which accounts for the early settlements being made on the banks of rivers and along the seacoast. Even perilous canoes were preferable to the miseries of land travel. We were slow in abandoning water travel and water transportation.

The story of our upward growth from the dugout canoe, the first vehicles of transportation, to the floating hotel of today, from the dog-sled and Conestoga wagon to the thunderbolts that we call express trains, and just recently the transcontinental air transportation, wonderful as the progress has been, is not one that inspires us with pride alone. There are tragedies in it, blunders, blindness, and mistakes innumerable.

For nearly a hundred and fifty years from the establishment of the first permanent settlements along the Atlantic Coast there were practically no improvements made in the manner of moving over the face of the land. Almost all progress, in that respect, was confined to improving Indian trails which led into the wilderness, joining a newly-established farm or settlement to its neighbors, or turning old pack horse paths into crude wagon roads as the settlements gradually grew into towns. During all that time the trend of travel, generally speaking, was north and south. True, there were a few adventurous spirits who plunged into the unknown and

sometimes came back bringing tales of distances beyond comprehension, of never-ending woods, of unknown mountains, rivers or lakes. But that was not travel. That was adventure, hunting, or sheer folly, and the population, clinging to its little strip of a hundred and fifty miles in width along the coast, never seriously considered giving battle to the vastness which brooded beside them.

The first settlers came into this part of Pennsylvania on horseback, traveling over narrow paths broken by the Indians. These pioneers made their way over the hills and through the dense forests, blazing the trail as they moved forward that it may guide their return, if necessary, or make the way for others who were to follow them. Horses then became so plentiful that no one walked save a vagabond or a fool. Women rode with as much ease and frequency as men. Young girls rode on side saddles for long journeys. Older women rode behind men on pillions, or padded cushions, which had a sort of platform stirrup.

Driving alone, that is, a man or woman driving for pleasure alone, without a driver or post boy, is an American fashion. It was carried back to Europe by both the French and English officers, and the custom was noted with approval, as was also the usual good condition of our roads. The fact is that because our roads were good we adopted in America the light weight continental carriages.

Pennsylvania has approximately 13,500 miles of steam railroad lines, 4,000 miles of electric railway track largely in the cities, and a total of more than 90,000 miles of highways and streets, of which the State systems, primary and secondary, include in excess of 12,000 miles.

The principal arteries in internal water-borne transportation are the Monongahela, Allegheny, Ohio, and Delaware rivers, and the Lehigh Coal and Navigation Company canals. The Susquehanna is too shallow for navigation. In the north-west corner the city of Erie owes its importance to its position on Lake Erie.

According to reports for 1924 the railroads within the Commonwealth carried a total of 363,000,000 passengers and 827,000,000 net tons of freight. The total tonnage of freight carried by the railroads, products of the mines represented sixty-three per cent., manufactured products twenty-six per cent., products of agriculture five and one-half per cent., products of forests, four per cent., and products of animals, one and one-half per cent. The electric lines carry approximately 1,700,000,000 passengers annually. In 1924 there were transported over the State Highway System nearly 6,000,000 tons of freight.

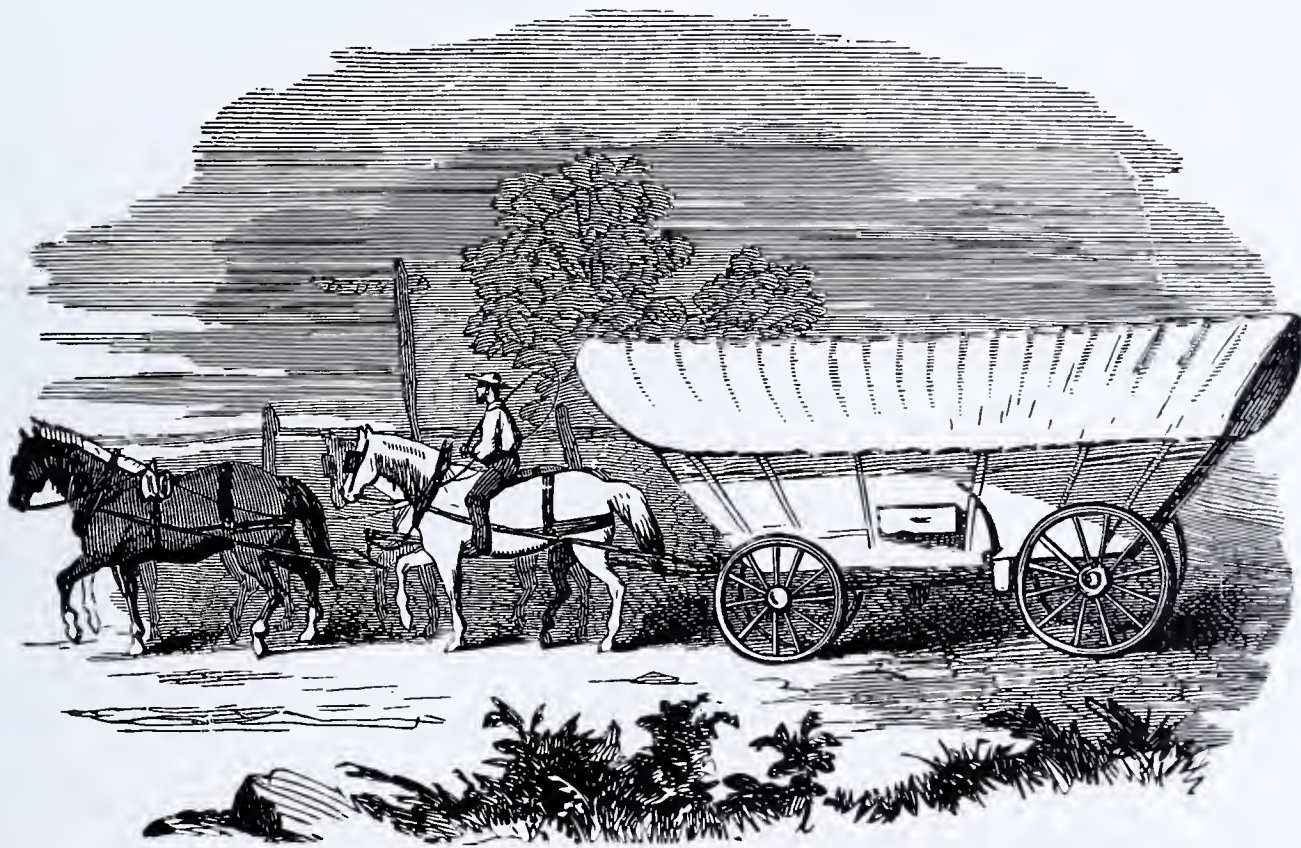
At Pittsburgh there were 14,500,000 tons carried on the Monongahela River, and about 4,000,000 tons on the Allegheny. The steamers on Lake Erie produced a traffic through the port of Erie of more than 2,000,000 tons, and on the Delaware River at Philadelphia the traffic amounted to more than 19,000,000 tons. The canals carry more than one million tons annually.

Public Highways—There are in Pennsylvania approximately 93,000 miles of public roads, exclusive of city and borough streets, of which 10,719 miles were

on the State-aid highway systems in 1924, and under the direct supervision of the Department of Highways. Through additions, this mileage on January 1, 1927, was approximately 12,000 miles. Of this mileage about 4,000 miles have been designated as the primary highway system, which includes the connections between the larger population centers, county seats, and routes into adjacent States. This system is, with few exceptions, co-extensive with the Federal-aid Highway System. The remainder, or about 8,000 miles, consists of roads designated as secondary State highways and State-aid highways.

These highways serve more than 9,000,000 people scattered over 45,000 square miles of territory, within sixty-seven counties, forty-three cities, 931 boroughs, and 1,571 townships.

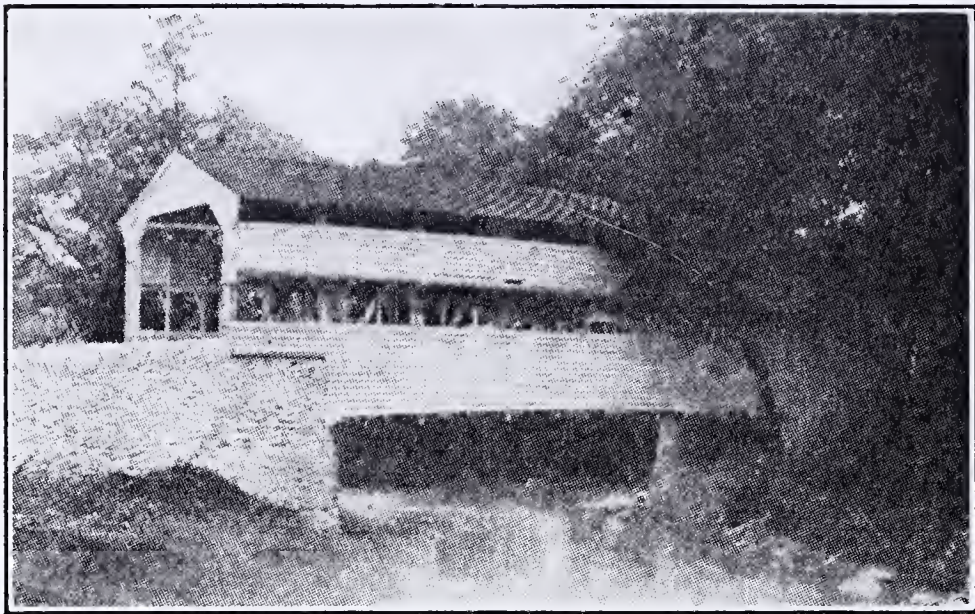
An historian in 1807 said: "It was not at all uncommon to see as many as five hundred packhorses passing the Harrisburg ferry, going westward loaded with seeds, salt, iron, etc. The iron was carried on horseback, being crooked over and around the bodies of the animals; barrels or kegs were hung on each side of this. These faithful packhorses were generally placed in divisions of twelve, carrying about two hundred pounds each, going single file, and managed by two men, one



Conestoga Wagon

going before the leader, and the other in the rear to see to the safety of the pack. When the bridle road passed along declivities over hills, the path was in some places worked out so deep that the pack or burden came in contact with the ground, and was often displaced." There were regular packhorse companies established in many places, such as Lancaster, Harrisburg, Carlisle, Shippensburg, Bedford, and Pittsburgh.

The corduroy road, made by filling up marshy places and chuck holes with saplings and logs from the crowded forests, laid close to each other across the road, rendered these highways passable by carts and stagecoaches.



Old Covered Bridge

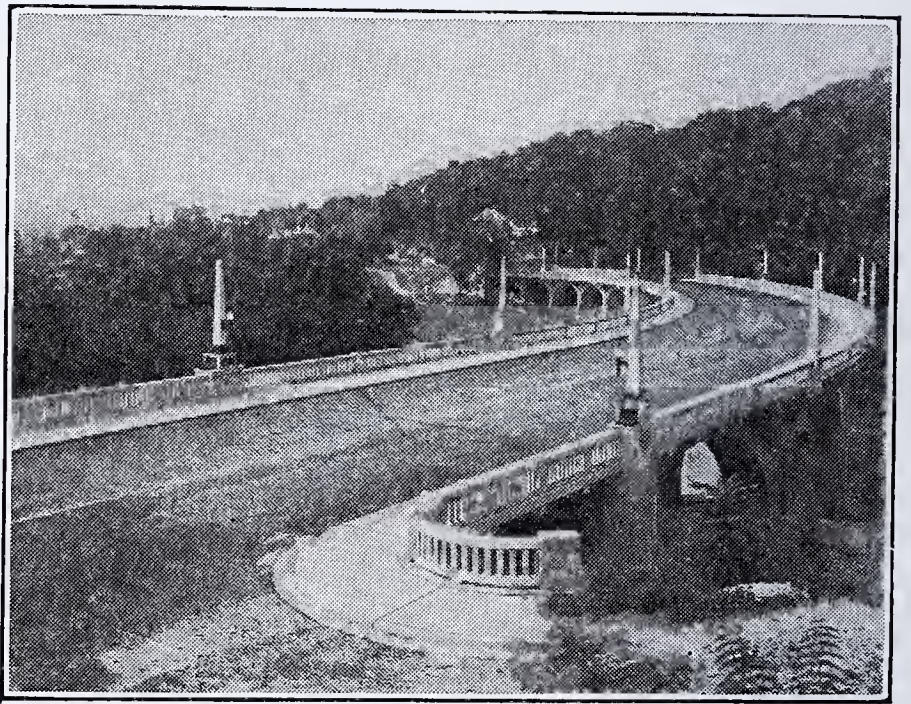
today lead the world. The largest stone bridge in the world is over the Susquehanna River at Rockville.

The "Chronicle," of Harrisburg, on November 11, 1816, carried this item: "On Sunday, the 3rd. inst. the mail coach crossed the Susquehanna on the Harrisburg bridge. Loaded waggons and carriages of every description now pass over."

The records show that Pennsylvania was better supplied with wagons than any of the other colonies. Braddock secured here for his expedition in 1755 one hundred and fifty wagons. In 1780 Washington made a requisition for ten hundred and sixty-six wagons from this State, in addition to those which had already been supplied. Joseph Reed, who was then President of the State, protested, saying: "Your Excellency recollects that the army has been chiefly supplied with horses and wagons from this State during the war and that most of them now attached to the army are drawn from this State." He further adds that one-half of all the supplies furnished the army for the preceding three years came from Pennsylvania.

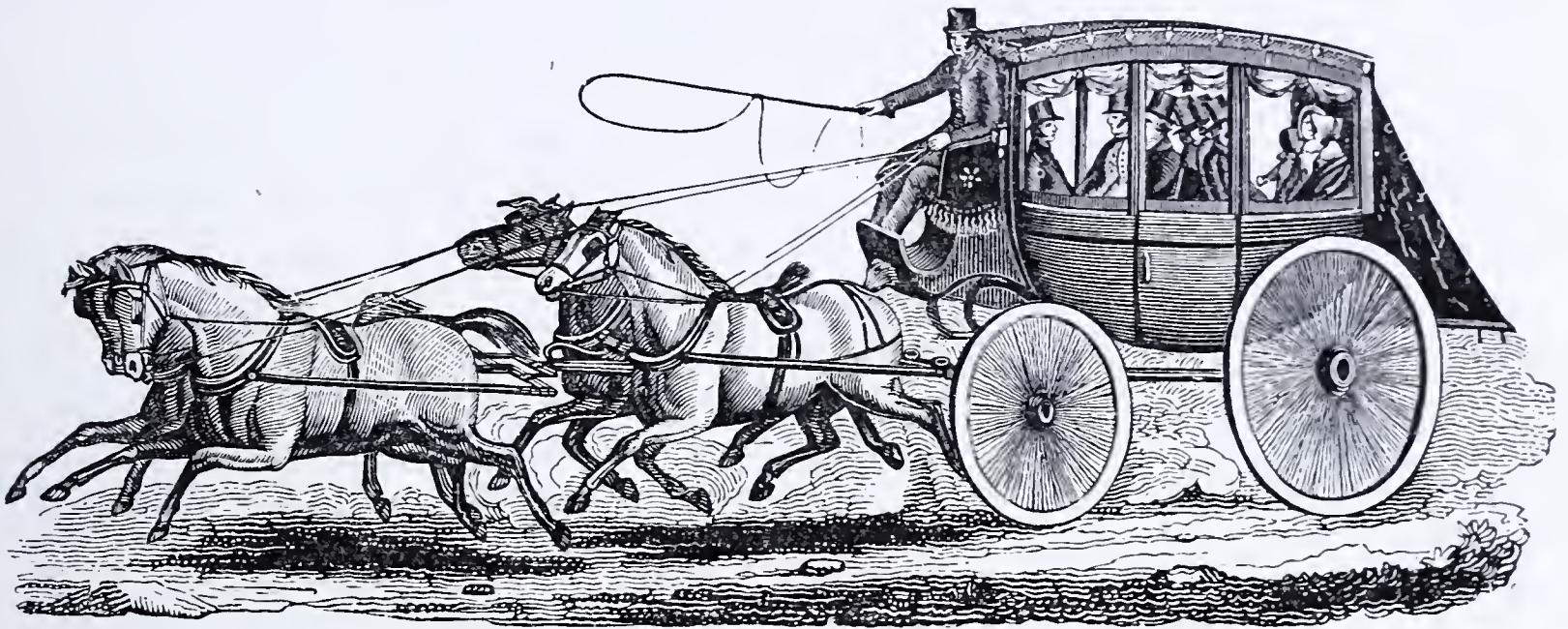
The word stagecoach was originally applied to a coach which ran from station to station over a number of stages of the road, usually with fresh horses for each stage. It was not used to designate a coach which ran only a short distance. The story of the stagecoach begins at a later date than that of the tavern, but the two allies reached the height of their glory together. The chariots of the Appian Way,

Ferries and bridges were built soon as there were roads. True, many of the bridges of the early provincial days were insecure makeshifts, and in many cases only floating bridges, but we were soon to excel in bridge building and



Main Highway, Reading

drawn by the fastest horses of ancient Italy, formed a dismal cortège in comparison with the sprightly procession of stagescoaches on the old stage routes of our Commonwealth. The body of the stagecoach furnished the model for the first passenger cars on the railway; and many of the present-day motor cars are comparable in size and furnishings. Early in our history we began to have coaches. Watson gives a list of all private citizens who kept carriages in Philadelphia in 1761—there were thirty-eight. Eleven years later only eighty-four. In 1794, when the city had



Mail Coach

50,000 population, there were 847 carriage owners, of which only thirty-three were coaches, the others being smaller vehicles.

Excitement followed in the wake of the stagecoaches all along the road. Their arrival in the towns was the leading event of each day. Relays of fresh horses were placed at intervals of about twelve miles. Ordinarily a driver had charge of one team only, which he drove and cared for. Mail drivers, however, often drove three or more teams, which were cared for by grooms at the stations.

In unusual and violent weather the slowness of stage and mail coaches was appalling. In 1704 we read: "Our Philadelphia post from New York is a week behind, and not yet com'd in." A story is told in a Philadelphia newspaper: "A stage between this city and Trenton took fire and was entirely consumed. It was occasioned by a passenger putting a hot brick on the floor of the stage to keep his feet warm; and what is more extraordinary, it burnt with such rapidity that the passengers, six in number, with difficulty made their escape."

Stage lines are said to have been running in 1733 between Philadelphia and New York by way of Burlington and Perth Amboy, and there is an authentic record that, in November, 1756, a new stage left John Butler's "Sign of the Death of the Fox," in Strawberry Alley, Philadelphia, for New York. This trip was made in three days. After 1785 stage lines connected Philadelphia with New York, Albany, and Boston. The expense of traveling between Philadelphia and Pittsburgh in 1812, a distance of 297 miles, was \$20.00 by stage with way expenses of

\$7.00, and it took six days. The expense by wagon was \$5.00 a cwt. for persons and property, and the way expenses were \$12.00, for it took twenty days.

The first trip by stage-wagon over the Bethlehem Pike was made by George Klein, September 10, 1763. After that date he ran regularly between Bethlehem and Philadelphia, making the round trip weekly. He started Monday mornings from the Sun Inn, Bethlehem, and on his return set out from the King of Prussia



Tally-ho

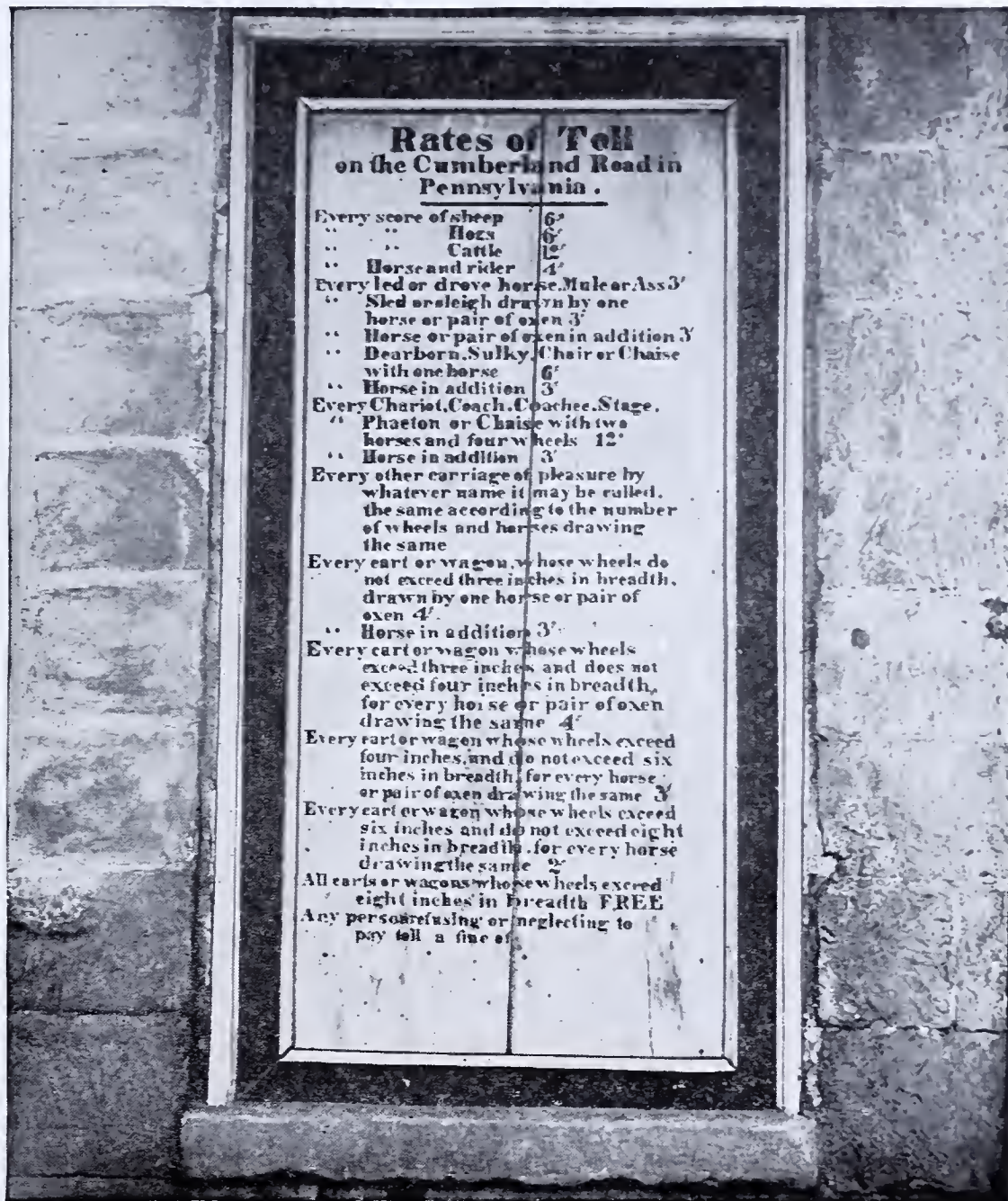
Inn, Race Street, Philadelphia, on Thursdays. The distance was fifty-two and three-quarters miles. Every mile of this route became famous before the close of the Revolutionary War, for Bethlehem was crowded with delegates to Congress, officers, soldiers, civilians, and many prisoners of war. Even the famous Liberty Bell was hauled over this route after the battle of Brandywine, so that it could be stored away in the cellar of Zion Reformed Church, Allentown, until the danger of its capture by the British was past.

The traveler in the old stagecoach was not tantalized by the fleeting half-glimpse of the places which we gain in railroad or automobile travel today. He had ample time to view any unusual, beautiful, or historic spot as he passed. He had leisure

to make inquiry, he had many hours to hear his fellow-traveler's tale, or that of the driver. The frequent traveler grew versed in its lore and its history. He knew the gossip, too, of each house as he passed, he knew the traditions and tales of each locality. The traveler by coach learned constant lessons from the great teacher, Nature. The city bred man learned of the round of work on the farm, the succession of crops, and he knew each tree in the forest, each grain and grass, and wild-flower when he saw it. He heard the songs of the birds, he witnessed the timid flight of wild creatures, quail, pheasants, turkeys, rabbits, woodchucks, squirrels, and frequently the wily fox and the deer. At night he heard the strange sounds of owls, and sometimes the snarl of the catamount.

The old stage routes had a peculiar nomenclature familiar to the tens of thousands who traveled over them in their palmy days. The names applied to particular localities along the routes were of importance and blended harmoniously with the unique history of each route. As examples we read of The Shades of Death, The Narrows, Girty's Notch, Piney Grove, Big Crossing, Devil's Elbow, Negro Mountain, Woodcock Hill, Chalk Hill, Red Hill, Big Savage, Snake Hill, Laurel Hill, Fourteen Mile Narrows, The Turkey's Nest, Sterrit's Gap, Doubling Gap, Indian Spring, Burnt Cabins, and Possum Hollow. Rich memories always clustered

around every one of these names, and old stage drivers and wagoners delighted to relate the scenes with which they were associated.



Rates of Toll on the Cumberland Road in Pennsylvania.	
Every score of sheep	6'
" " Hogs	6'
" " Cattle	12'
" " Horse and rider	4'
Every led or drove horse, Mule or Ass	3'
" " Sled or sleigh drawn by one horse or pair of oxen	3'
" " Horse or pair of oxen in addition	3'
" " Dearborn, Sulky, Chair or Chaise with one horse	6'
" " Horse in addition	3'
Every Chariot, Coach, Coachee, Stage, Phaeton or Chaise with two horses and four wheels	12'
" " Horse in addition	3'
Every other carriage of pleasure by whatever name it may be called, the same according to the number of wheels and horses drawing the same	
Every cart or wagon, whose wheels do not exceed three inches in breadth, drawn by one horse or pair of oxen	4'
" " Horse in addition	3'
Every cart or wagon whose wheels exceed three inches and does not exceed four inches in breadth, for every horse or pair of oxen drawing the same	4'
Every cart or wagon whose wheels exceed four inches and do not exceed six inches in breadth, for every horse or pair of oxen drawing the same	3'
Every cart or wagon whose wheels exceed six inches and do not exceed eight inches in breadth, for every horse drawing the same	2'
All carts or wagons whose wheels exceed eight inches in breadth	FREE
Any person refusing or neglecting to pay toll	a fine of

Tablet on Old Toll House

The National Road, commonly known as the Cumberland Road, which began at Cumberland, Maryland, and ran to Wheeling, West Virginia, is the only highway of its kind ever wholly constructed by the government of the United States. When first opened it was 130 miles long and cost one and three-quarter millions of dollars.

In August, 1803, the first through line of coaches from Philadelphia to Pittsburgh was established. This route was *via* Lancaster, Harrisburg, Carlisle, Shippenburg, Bedford, Somerset and Greensburg. Time, seven days.

The last Governor of Pennsylvania to ride to the State Capitol in a stagecoach was William F. Packer, who rode from Williamsport to Northumberland and, after a night's lodging at the Burr House, was most delighted the next morning when Mr. Amos Kapp appeared at the hotel to pay his respects to the Governor-elect and remarked: "Do not be in a hurry, your coach will be here soon." In a few moments the "Clara Coach," with four white horses, drove up in front of the Burr House, when Mr. Packer and his family climbed aboard. Mr. Kapp owned as many as one hundred fine horses at a time, as did Mr. Jesse C. Horton, also of Northumberland.

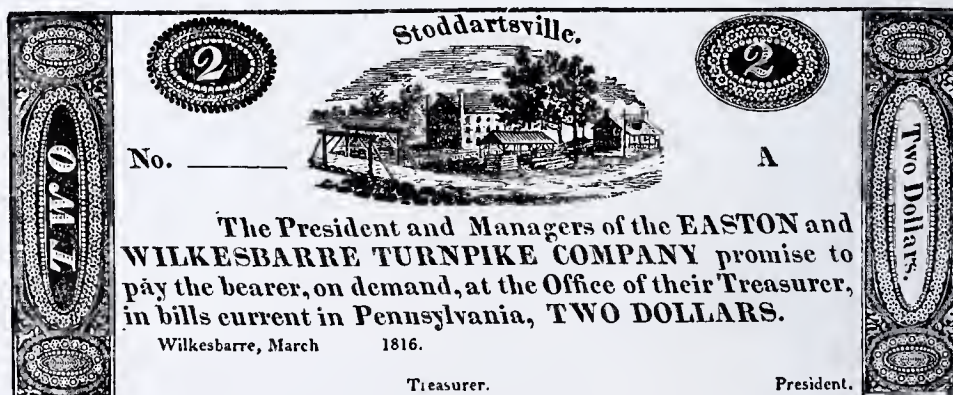
The Lancaster Turnpike was the first "artificial" road constructed in Pennsylvania, and one of the earliest in the United States. It was sixty-two and one-quarter miles in length, and completed at a cost of approximately \$444,000, in 1794. It was constructed by a turnpike company incorporated for the purpose in 1792, the first of a long line of similar companies which sprang into existence during the fol-



Toll House and Single Toll Gate

lowing eighty years. In the early years of the nineteenth century many miles of such roads were constructed. There were upwards of 2,500 miles in operation in 1831, and a large mileage was added during the 'forties and through the period following the War of the Rebellion, up to 1873, when the present Constitution was adopted.

The Commonwealth appropriated about \$2,000,000 toward the construction of these turnpikes; but almost without exception they proved to be unprofitable ventures. Many of them were poorly constructed, and but few yielded sufficient revenue to pay for their maintenance. This resulted in many of them being abandoned, and failure to properly maintain others caused their condemnation, when the maintenance devolved upon the counties or townships, boroughs or cities through which they passed, but the change in authority did not result in greatly improving the road conditions. In many instances conditions became worse, result-



**Easton and Wilkes-Barre Turnpike Company
Two Dollars**

ing in the common belief that an ordinary dirt road was a bad road because it was generally impassable six months in the year, but an abandoned turnpike was even worse, because it was bad all the time.

At the time of the establishment of the State Highway Department, in 1903, there were still in use over 1,100 miles of toll roads. The last of these were freed of toll during the administration of Governor John S. Fisher.

Interest in improved roads revived with the vogue of bicycles, the result of which was the beginning of the construction of telford-macadam roads. Then followed various acts passed by the General Assembly; the first, June 12, 1893, enabled the taxpayers of townships and road districts to make roads at their own expense; the act of June 26, 1895, organized a county road system in Allegheny County, which was soon spread to other counties.

With the coming of automobiles the influence of the motorist was added to that of the cyclist and led to the act of 1903, providing for the establishment of the State Highway Department. It was not, however, until the act of May 31, 1911, that roads were built and maintained at the sole expense of the Commonwealth.



Easton and Wilkes-Barre Turnpike Toll Gate

Canals—The story of the rise and fall of the old Pennsylvania Canal is the story of canals in America. The history of our canals is a significant commentary upon American life and character—restless, eager for a change, tearing down as soon as we have built, tossing away a tool because another has been invented which is a split second faster.

In the earliest days water communication was the popular mode of commercial transportation, and on the several rivers of Pennsylvania it was with “dug outs.” They were made in imitation of the Indian canoe and consisted of a pine log with a portion of it dug out like a trough. The Indian traders used them to convey furs and other products down the stream. Next came the bateau, which was a flat boat and was considered of great value to early settlers and traders along the Susquehanna. But for river navigation on a more extended scale the Durham, or keel boats were of far greater importance. Thousands of bushels of grain and produce were brought down stream to the markets in them.

On account of the rapids at the mouth of the Conewago Creek, at the place on the Susquehanna long known as York Haven, these keel boats could not pass down that stream farther than Middletown. There the boats would be unloaded and the goods conveyed overland to Philadelphia and Baltimore.

Some of the most picturesque scenes in American history were those of the old flatboat days. To market his own or his neighbor's products, a man built a boat,



Old Canal Days

and committed it to the waters. Having reached his destination and sold his cargo, the captain must sell his boat, too, for of course it was out of the question to take it back up the stream. Usually it was broken up and sold as timber. Then the boatman walked back home, picking up a ride on a wagon whenever he could, very much in the same manner as the hitch hiker of the present day. Even as

early as 1790, 150,000 bushels of grain passed down the Susquehanna, destined for Philadelphia and the export trade.

The spirit of the early settlers in Pennsylvania was alive with the idea of internal improvement and very early they were anxious to reach out toward the western empire that was to become the promised land and furnish food for the world. William Penn fostered the idea and recommended a scheme to connect the Susquehanna, at what is now Middletown, with Philadelphia, by way of the Schuylkill, the Lebanon and Swatara valleys, uniting the waters of the Schuylkill River at Reading with those of Tulpehocken Creek and the Quittapahilla, which flowed into the Swatara ten miles westward, and thence into the Susquehanna at Middletown. This was before the year 1700.

This vision of William Penn eventually resulted in the earliest survey for a canal in America, in 1762, but for lack of money actual construction did not begin on it for nearly thirty years, and then only four miles of it had been built when poverty halted its progress, and it lay dormant for almost another thirty years.

In 1761 commissioners were appointed by the Proprietaries to clear, scour and make the Schuylkill navigable for boats, flats, rafts, canoes and other small vessels,

from the ridge of mountains commonly called the Blue Mountains to the river Delaware. This action was the initial step in the formation of the Schuylkill Navigation Company, whose future works did so much to develop that great valley and the inexhaustible mines of coal not dreamed of in the days of the Founder. The broad river itself in many portions was concentrated into pools, forming slack water navigation, and these pools were connected by sections of canals with a depth of six feet of water, passing boats with a capacity of 200 tons.

During the latter part of the year 1789, the Supreme Executive Council appointed a commission to view the Delaware, Schuylkill, and Susquehanna rivers, in pursuance of an act of Assembly passed September 28, 1789, with the object of ascertaining data whether or not these waters could be rendered navigable. This commission, composed of Timothy Matlack, Reading Howell, William Dean, John Adlum and Benjamin Rittenhouse, attended to the important duty assigned them and in their report strongly recommended that a commission of experienced surveyors be named for "the purpose of ascertaining the most convenient and practicable place for connecting the waters of the three rivers, with those of the Allegheny, Lake Ontario and Lake Erie, and in cases where portage by land will be necessary, to examine the face of the country and report the most suitable places for landings and roads."

A great meeting was held at Paxtang, October 20, 1789, which was attended by citizens of eight counties, when an organization was effected with James Ewing, of York County, as chairman. Committees were named for each county to solicit subscriptions for the furtherance of these surveys, and a commission was appointed, consisting of Frederic Antes, of Northumberland County; John Brattan, of Huntingdon; Andrew Galbraith, of Cumberland, and Sabastian Graff and John Halderman, of Lancaster, to superintend the work of removing obstructions in the Susquehanna and Juniata rivers. A resolution was adopted which authorized the appointment of three surveyors, to begin at the mouth of the Juniata and proceed up the Susquehanna to Sunbury, thence up the West Branch to Sinnemahoning Creek, thence to Canoe Place, or such place "as will connect most easily with any practicable branch of the Allegheny, the Consua, Toby's Creek, or any other which may discharge itself into the Allegheny nearest to the mouth of French Creek, and thence examine French Creek up to Le Boeuf and the portage of Presqu' Isle."

Timothy Matlack, John Adlum, Samuel Maclay, Reading Howell, Frederick Antes, and William Dean were commissioned April 9, 1790. The three first mentioned set out on the work along the Susquehanna and the others took up the work on the lower Susquehanna and Schuylkill. Samuel Maclay kept an interesting journal of the experiences of the commission, from which the following is taken: Messrs. Matlack and Adlum set out from Philadelphia May 6, and met Maclay at Lebanon. They remained there nearly a week, and began their work when they set out from the Swatara, having taken James McLaughlin, Edward Sweeney, and Matthew Gray into the pay of the State. The party reached Herold's, below Sel-

insgrove, by May 17, then proceeded to Northumberland. Here Maclay went to visit his family at Lewisburg. John Adlum visited with his friend, Colonel Frederic Antes, and Timothy Matlack was the guest of Colonel William Wilson, also of Northumberland.

The party was organized during this stay at Northumberland. The actual survey began at Canoe Place, where Adlum ran a line to the Allegheny. He writes in his journal of catching beaver and of the large numbers of "wolves which frequently crossed their track, in a very indifferent manner." June 14, they surveyed the West Branch of the Sinnemahoning as far as Boyd's quarry, and the following day reached Bennett's. On July 2, the party reached the Ohio River, and went down it, being guided by an Indian named Doctor Thomas.

When the western boundary of the State was reached, Conne Shangom, the chief, had gone to Venango, but another chief, Captain John, made the commissioners a speech of welcome. At this place they came across a Dutchman, who had been taken prisoner by the Indians in the last war, but who chose to continue to live with them. On July 7, the commissioners had an interesting interview with the celebrated Indian chieftain, Cornplanter, at Jenoshawdego.

Maclay records that the Indians were very jealous of them until they were made to fully understand their mission. Cornplanter then welcomed them with a speech. Maclay says: "We were addressed by an orator, on behalf of the women." This speech of Cornplanter's was responded to by Colonel Matlack. The commissioners then went to Cornplanter's town and "had the honor of his company for supper." July 14, they struck the old French road to Erie. Maclay records that "the cart ruts are quite plain yet." He further records: "Lake Erie is a fresh water sea. You can see the horizon and water meet." The party pushed down the Allegheny a distance of eighty miles, and Sunday morning, July 18, they met Mr. Adlum and his party. Adlum finished a survey the next day, and the entire party was again united at Buckaloon, or Brokenstraw, about five miles from the present town of Warren. On the 20th the party arrived at Fort Franklin, where the commanding officer, Lieutenant Jeffries, was very polite to them. Two days later Maclay records: "We paired off and discharged an old Indian chief and a white savage." The commissioners left Fort Franklin this day, and reached David Mead's, at present Meadville. They then went to Le Boeuf, and from there back to Fort Franklin, where they arrived August 1. Maclay writes about using some oil, collected from a small oil spring along French Creek, on his lame back. The effect was beneficial.

The survey of the Allegheny River began at this point, and they also explored the tributary streams all the way down that river to the Conemaugh, then to Frankstown, on the Juniata River, where they arrived September 8. The commissioners proceeded down the Juniata to the Susquehanna. Maclay notes that he arrived at his home Friday, September 17, and found his family all well and at dinner.

The report was made as three different surveys, and the cost was £561 27s. The subject created such an amount of interest for the internal improvement of

the outlying territory that Governor Mifflin, in his message to the Legislature in 1791, said: "The very laudable attention paid to the survey of roads and rivers is a conclusive proof of the importance of the object, while it furnishes an example highly deserving of your imitation. Every day, indeed, produces an additional incentive to persevere in improvements of this kind. The commercial policy of insuring the transportation of our produce from the interior counties to the capitol is dependent upon the ease and facility of the communications that are established throughout the State; and when we consider Pennsylvania, not only as a route that actually connects the extreme members of the Union, but as a natural avenue from the shores of the Atlantic to the vast regions of the western territory, imagination can hardly paint the magnitude of the scene which demands our industry, nor hope exaggerate the riches of the reward which solicits our enjoyment."

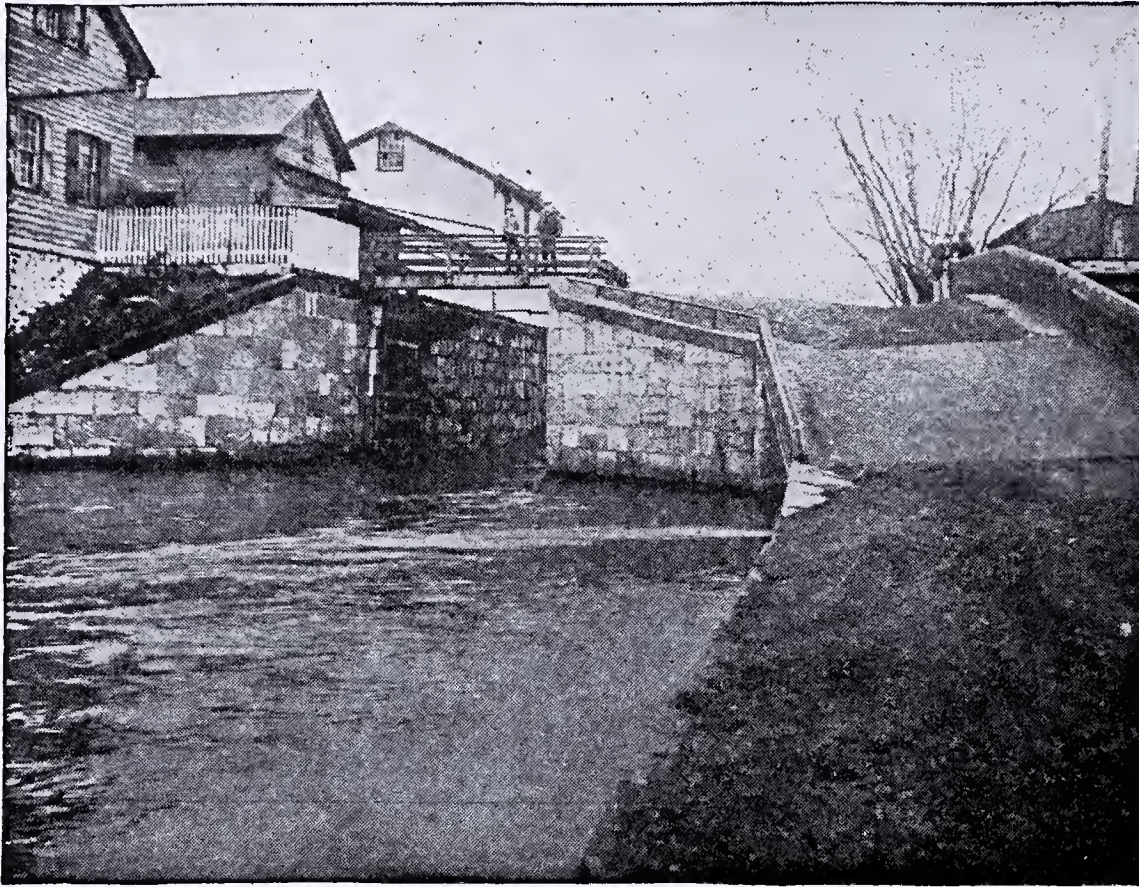
The committee appointed in January, 1791, to examine the report of the commissioners who explored the Delaware and western waters of the Susquehanna, reported February 19. They considered the Delaware toward New York State and to Lake Ontario; the Lehigh and Schuylkill, the latter with the object of reaching Harrisburg; the Juniata and the north and west branches of the Susquehanna. This report was comprehensive and proved the wisdom of those assigned to the important work for, when the canals were later built the system hardly differed at any point from this report.

Enterprising citizens realized the cost of overland transportation was too great to afford profit and soon began to devise plans by means of which the obstacles to navigation at Conewago Falls might be avoided, and passage down the Susquehanna from its upper reaches to its mouth might be accomplished. Bertram Galbraith, of Lancaster, and others were appointed to explore the river and report some feasible plan. The Revolutionary War prevented immediate action, and the matter was postponed until the year 1789, when Bertram Galbraith, Thomas Hulings and Samuel Boyd were appointed commissioners "to explore the Susquehanna and Juniata Rivers." They reported January 30, 1790, that "the Conewago Falls, about fourteen miles above Wright's Ferry, is the great obstruction and bar to the wealth and population of our western country." They urged that a canal should be built around these falls or riffles.

A petition was addressed to the General Assembly praying for financial assistance, and it became an important subject for discussion. It was proposed that a canal be built one mile long, thirty-three feet wide and nine feet deep.

One of the most notable events in the history of Pennsylvania was the formal opening of this canal, which event was celebrated November 22, 1792. Governor Thomas Mifflin, one of the projectors, and a number of distinguished guests attended the ceremonies, having ridden on horseback to the foot of the falls on the Lancaster County side. This was the first canal built in Pennsylvania, and so far as definite records show, the very first in the United States. It was, in fact, the initiatory enterprise which inaugurated a great system of artificial navigation and internal improvement in Pennsylvania.

Governor Mifflin was, indeed, a great advocate of the canal, and on April 13, 1791, approved an act appropriating £5,250 "to improve the Susquehanna River from Wright's Ferry to the mouth of the Swatara." The contract was let July 3,



Old Canal Lock

1792. James Brindley was selected as engineer. This first improvement of river transportation was by the Conestoga Lock and Dam Navigation Company. It improved the waterway from Lancaster to Safe Harbor, a distance of eighteen miles. The estimated cost was \$20,000 and the State appropriated half this amount. The final cost was \$102,000, but the canal proved to be of great importance to

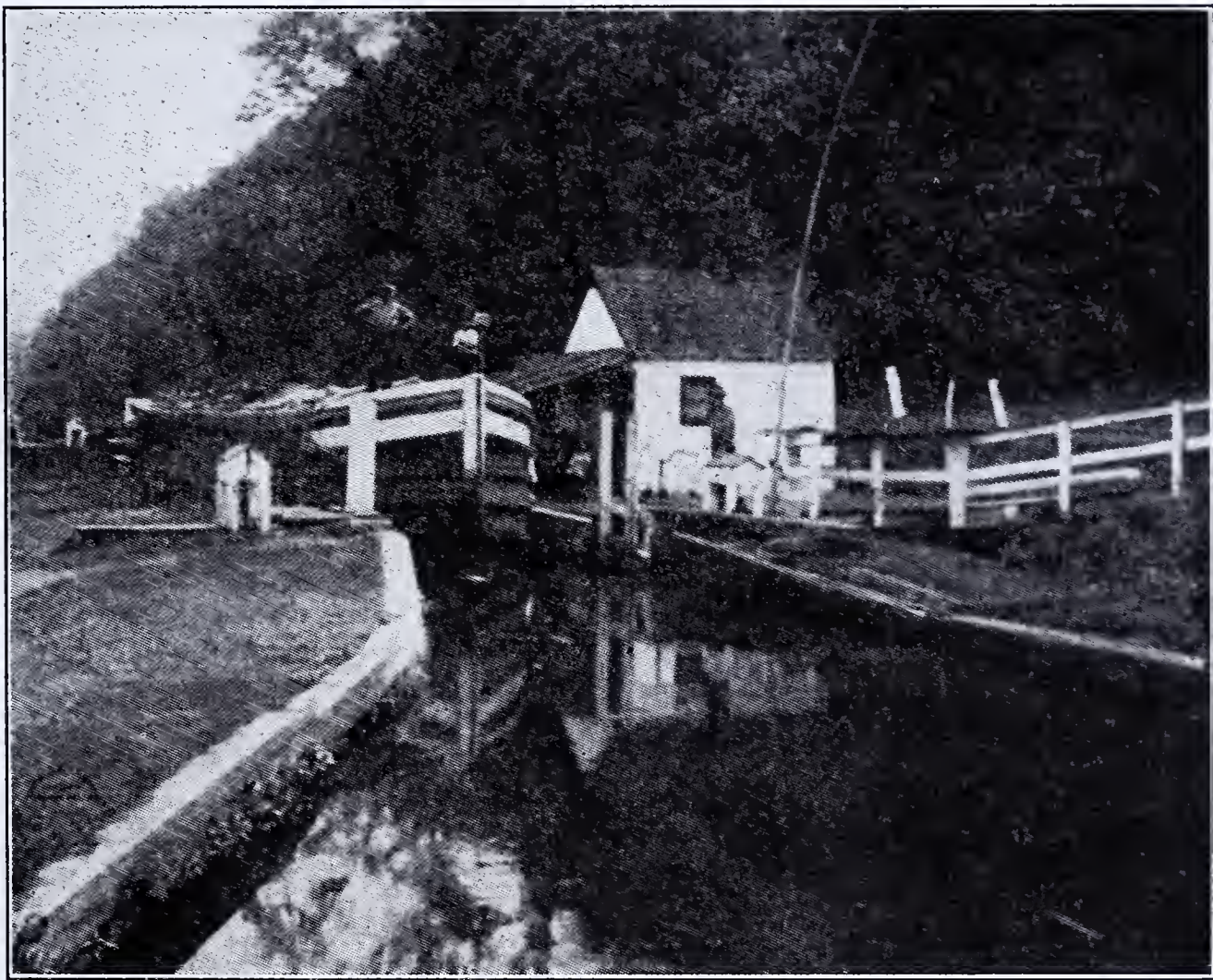
Pennsylvania, and became a center of attraction. The affairs of the canal were managed from 1797 to 1814 by a canal company, and proved to be most successful. An attempt was made during this period to build a canal around the falls on the opposite side of the river. It was intended as an opposition canal, but ended in failure.

As early as 1808 Albert Gallatin, of Pennsylvania, Secretary of the Treasury, at the request of Congress, had drawn up his famous "Report on Roads, Canals, Harbors, and Rivers," in which he recommended the construction by the government of a number of canals and trunk roads, whose total cost would be \$20,000,000. This was a vast sum for those days, but so rapidly had the national wealth increased in twenty years that Gallatin declared the country could afford it. The Treasury was full and a surplus accumulating. But the embargo and then the war with England came on, and States and corporations begging for help for canals and roads were told that nothing could be done. William Duane wrote, in 1810, that there was not a single canal in the State and that two-thirds of the lands remained a wilderness.

At the close of the second war with Great Britain a number of prominent citizens urged upon the Federal Government the necessity of establishing a general system of artificial navigation extending throughout the thickly populated States. While they failed to secure their objects through the Congress, their appeals stimulated action upon the part of individuals, and corporations were formed which led to the construction of trunk canals by several States.

In Pennsylvania there were many canals projected and actually constructed, the work being begun by these corporations a decade before the Legislature determined upon the construction of a canal and railroad line to connect the Delaware and Ohio rivers. The most successful enterprise of its kind to be projected and carried into successful operation was the Schuylkill Canal Navigation Company, incorporated on March 8, 1815.

The purpose of this company was transporting coal, lumber, merchandise, produce, etc., by a system of canals and slackwater navigation, which was to be afforded



Canal Boat Leaving Lock

by appropriating the water of the Schuylkill River from Mill Creek, in Schuylkill County, to Philadelphia. The transportation of such articles was then to be carried over the Center Turnpike to Reading, and the Perkiomen and Germantown Turnpikes to Philadelphia. The first board of directors were elected at Norristown on October 5, 1815, and the construction of the canal was begun in 1817. The total length of the canal from Port Carbon to Philadelphia was 105 miles, 62 miles of canal and 43 miles of pools in the river. The canal had a fall of 580 feet and there were 120 locks, 81 above Reading and 39 below, 28 dams, 17 arched stone aqueducts and a tunnel above Port Clinton was 450 feet long and cut through solid rock. The total cost of the canal was \$1,800,000. In 1827-28 the canal was extended to Mill Creek, making the total length 108.23 miles, and by an enlargement in 1846, the number of locks was reduced to seventy-one.

When water was turned into the canal at the beginning of July, 1824, the event was anticipated and celebrated as such an important occasion deserved. On the morning of July 5, amid the booming of cannon, and shouts of the people, three boats, "Thomas Oaks," "Stephen Girard," and the "DeWitt Clinton," moved down the canal from Reading. Then was witnessed the first triumph in a class of internal improvements which had been recommended by the far-seeing William Penn more than 130 years before. General Joseph Hiester, ex-Governor of Pennsylvania, managers, engineers and invited guests occupied the "Thomas Oaks," named after the engineer who constructed the canal; the "Stephen Girard" was occupied by citizens of Reading, and the "DeWitt Clinton" by business men and manufacturers. A fourth boat followed, being loaded with agricultural implements. At Pottstown a great concourse of people welcomed the party, and there was a military display and patriotic addresses. The boats returned to Reading about dusk, having been drawn by one horse at the rate of nearly six miles an hour without much effort. On July 26 the "Stephen Girard" made her first voyage to Philadelphia.

John and Nicholas Coleman introduced the system of running packet-boats through the canal from Reading to Philadelphia, the trips being made three times a week. It required one day in each direction. There were no sleeping quarters,



Canal Locks on Ohio River, Beaver County

but an excellent restaurant service was furnished, and the boats were well patronized. The first steamboat on the canal went from Philadelphia to Reading on December 5, 1826.

One is apt to think of a canal as having always a smooth, well-kept channel, but a journey on the Schuylkill, according to S. Alspach, in 1827, as published in "The Schuylkill Canal Navigator," says "the canal is very difficult without an experienced navigator or proper directions." A captain leaving Philadelphia was instructed to "Tow the whole way to Manayunk—let the horse go at a slow walk—attend to the line—keep a lookout for stumps and rocks—keep out about 10 or 15 feet, according to the situation of the place, till you pass through the Little Canal, then keep out about 30 feet till you come to Young's Landing—then keep the towpath

channel at the Falls about 10 or 12 feet from shore, and so continue until you have passed the rocks," and so on.

This canal has continued in operation and since 1870 has been managed by the Philadelphia and Reading Railroad Company as a part of its great carrying system. The portion now in operation extends from Port Carbon to Philadelphia, a distance of 89.88 miles.

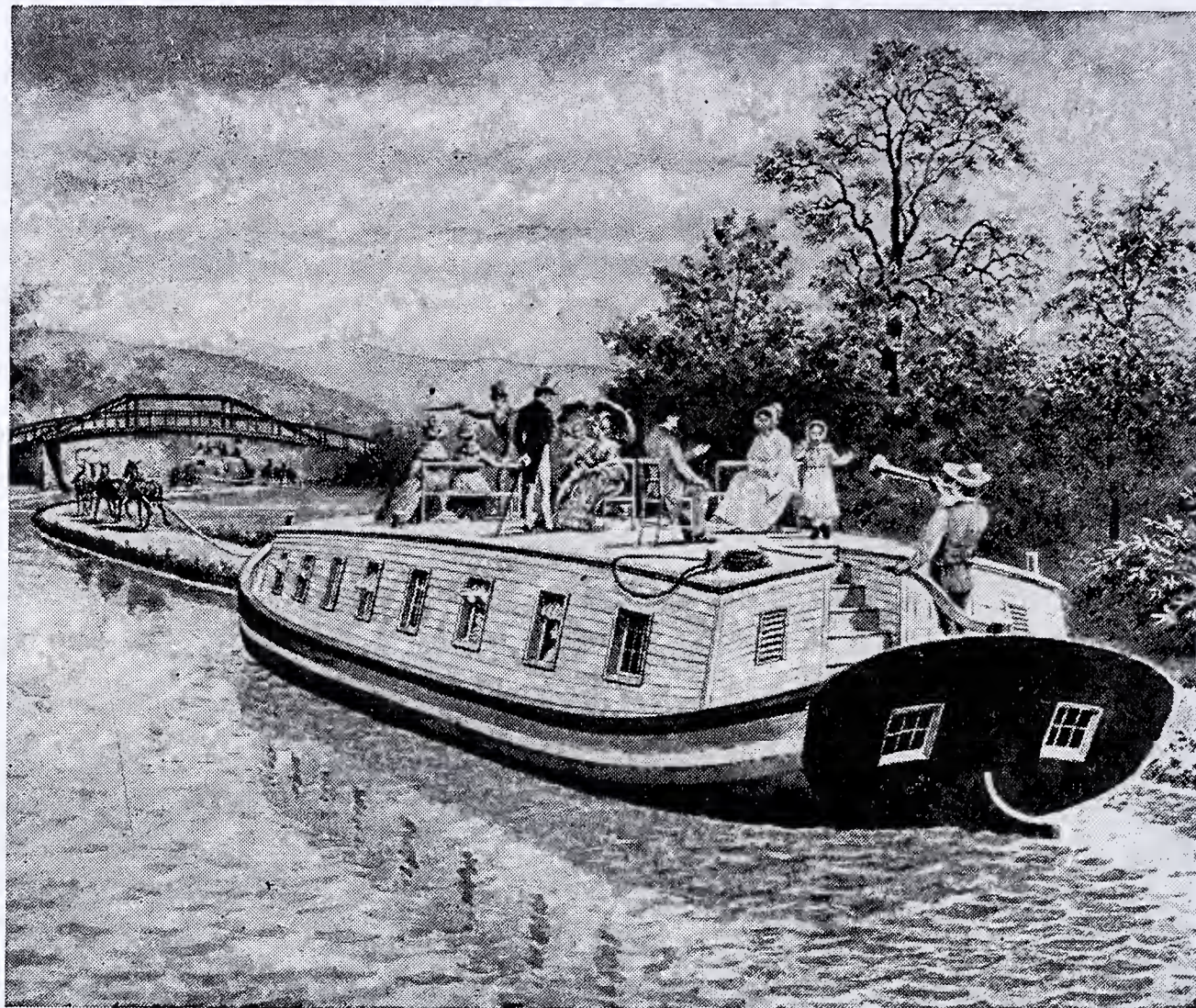
The construction of the Pennsylvania Canal involved some of the greatest engineering feats of the day. Various tunnels constructed in the State were the first in America. One at Auburn on the Schuylkill was the first for a canal, and three others which were earlier than any outside of Pennsylvania were at Lebanon on the Union Canal, at Tunnelton on the Pennsylvania Canal, and one under Grant's Hill, in Pittsburgh. The tunnel near Lebanon was 729 feet long, cut by hand through solid rock. Work was begun in May, 1825, under supervision of Simon Guilford, of Lebanon, construction engineer, and completed in June, 1827. The first boat to pass through was named "The Alpha," built at Meyerstown (then called Tulpehockentown). It came up on the evening of June 11, and passed through the tunnel on the morning of the 12th. When the canal was enlarged in 1857, the tunnel was shortened at the northern entrance to a total length of 600 feet. Both entrances were arched with stone, and retaining walls extended some distance from these arches. On October 9, 1932, the Lebanon County Historical Society unveiled a massive boulder, bearing a descriptive tablet, with appropriate ceremony.

For several decades, even after the steamboats came, thousands of the home-made flat boats, keel boats, arks or rafts, came down the Susquehanna every year; the volume was astounding. Nile's "Register" says that from February 28 to June 23, 1827, a count was made at Harrisburg, which showed that 1,631 rafts, 1,370 arks, and 300 keel boats had passed down the river, estimated to carry 40,000,000 feet of lumber, 468,000 barrels of flour and whiskey, 244,000 bushels of wheat, and 11,000 tons of coal. At Catawissa, on the North Branch, from 100 to 200 craft passed down stream daily in the spring and early summer.



Oldest Canal Tunnel in U. S. Near Lebanon, Built 1825

When passenger boats were introduced about 1825 there was genuine pleasure in traveling on one of the elaborate packets. These boats were ingeniously and well constructed with accommodations for about thirty passengers. They always furnished good tables and a wholesome and rich fare. The quiet rest, with pleasant conversation, ever changing scenery, and the bustle of newcomers and departing



Canal Packet Boat

passengers, helped to diversify the day's experience. The berths were made up each evening by members of the crew, and they were none too comfortable. Each berth was a narrow wooden or metal frame with a strip of canvas fastened over it, they were set as close together as possible all around the cabin. No one, of course, took off his clothes. Travelers of that day have left us most interesting and amusing stories of the travel on the canal packet boats.

Principal Canal Systems—The several principal canals of the State in the order of the dates in which they were created by acts of Assembly, and from which all others were either extensions or feeders, were as follows:

1. Schuylkill and Susquehanna Navigation Company, created September 29, 1791, passed through the counties of Dauphin, Lebanon, and Berks. It began at Columbia on the Susquehanna and extended to the mouth of the Juniata, then later on up along that river to Hollidaysburg at the eastern base of the Allegheny Mountains—a total length of 171 miles.

2. Delaware and Schuylkill, April 10, 1792, in Berks, Montgomery, and Philadelphia counties.

3. Conewago Canal in York County, April 10, 1793.
4. Brandywine Canal and Lock Navigation, April 10, 1793.
5. Lehigh Navigation, February 27, 1798, in Northampton and Luzerne counties. A total of forty-six miles.
6. Chesapeake and Delaware Canal, February 19, 1801.
7. Conococheague Navigation, February 7, 1803; connected Chambersburg with the Potomac.
8. Conestoga Lock and Dam Navigation, March 17, 1806, in Lancaster County, was an improvement of Conestoga Creek by locks and dams from its mouth to the city of Lancaster, a distance of fourteen miles.
9. Union Canal Company, April 2, 1811, connected the Susquehanna at Middletown to the Schuylkill two miles below Reading; length eighty-two miles. There was also a branch canal and feeder twenty-two miles in length with a railroad of four miles to Pine Grove coal mines.
10. Neshaminy Lock Navigation, March 26, 1814.
11. Schuylkill Navigation, March 8, 1815, in Schuylkill, Berks, Montgomery, Chester, and Philadelphia counties. This began at Port Carbon on Schuylkill, and ran to Philadelphia, a distance of 108 miles. Managed by the Philadelphia and Reading Railroad Company since 1870. Eighty-nine miles of this canal, from Port Clinton to Philadelphia, are still in existence.
12. Lackawanna Navigation, February 5, 1817, a part of the Delaware and Hudson Canal, from Honesdale on the Lackawaxen to the mouth of that stream, a distance of twenty miles.
13. Monongahela Navigation, March 24, 1817, in Fayette, Greene, Westmoreland, Washington, and Allegheny counties. From Johnstown on the Conemaugh, at the western base of the Allegheny, down the Conemaugh, Kiskiminetas and Allegheny to Pittsburgh—distance, 105 miles.
14. Octoraro Navigation, March 29, 1819.
15. Conewago Canal, east side, March 29, 1814.

After extensive surveys made in 1824 and 1825, the Commonwealth, by act of February 25, 1826, entered into the actual construction of an extended system of internal improvements and continued the annual expenditure of large sums of money for canals and railroads until 1841. Ground was broken at Harrisburg for the building of the Pennsylvania Canal on July 4, 1826. The Western section was completed and the first boat entered Pittsburgh, November 10, 1829. By the year 1834 a total of 673 miles of public works had been completed, at a time when the credit of the State was good. Unfortunately too extensive a system was undertaken and the works were not constructed or managed with economy. The debt in 1834 had mounted to twenty-three millions. By 1841 it reached forty-two millions, and the State defaulted even the interest on these bonds, when all work ceased.

In the report of the Canal Commissioners for 1827 was this paragraph: "In the latter end of May, the location of a line from the mouth of the Juniata to Northumberland was commenced by Mr. Simon Guilford. He was instructed to examine both sides of the Susquehanna with the utmost care, to present an estimate of each, and further, to ascertain whether the river might be advantageously crossed at any

intermediate point, so as to place the canal partly on one side and on the other. At the meeting of the board on the 2nd of July, a report was received from Mr. Guilford, accompanied by an estimate from which it appeared that a canal on the east side would amount to \$1,018,758, and on the west side to \$472,298. Strong representations were at the same time made, from Dauphin and Northumberland Counties, in favor of the east side, to all of which the utmost respect was paid. But the vast difference of expense was thought by the board to leave them no choice, and a location was adopted, beginning at Duncan's Island, and extending up the west side to a point opposite Northumberland." This canal was thirty-seven miles in length.

The canals of Pennsylvania embraced four major systems:

1. A great line of communication from Philadelphia, passing by Lancaster, Columbia, Middletown, Harrisburg, Lewistown, Huntingdon, Hollidaysburg, Johnstown, Blairsville, Pittsburgh, Beaver, New Castle, Meadville, to the borough of Erie, a total distance of 535 miles, of which 118 were by railroad, 28 by the Ohio River, and 397 miles by canal. This canal passed through the fertile agricul-



Bridge on Old Portage Railroad

tural country of Lancaster and Dauphin counties, the iron regions of the Juniata, and the bituminous coal fields of the Conemaugh, Kiskiminetas, and Allegheny.

A section of this route was necessarily over the mountain and in 1831 a charter was granted for the Allegheny Portage Railroad and work begun which, when completed on April 16, 1834, opened up a through line from the Atlantic Seaboard to Lake Erie. This unusual railroad was the wonder of all civil engineers at home and abroad for many years.

The portage extended from Hollidaysburg over the Allegheny Mountains at Blairs Gap to Johnstown, a distance of thirty-six and a half miles. In this short distance, however, it overcame an elevation of 1,398 feet above Hollidaysburg and 1,171 feet above Johnstown, the summit being 2,325 above tidewater at Philadel-

phia. There were five inclined planes on each side of the summit and eleven levels or graded lines of railroad connecting the planes on which horses were used on the short levels and locomotives on the longer ones. Canal boats, built in sections, were carried over the mountains. The earliest engine to run on the levels was the "Boston," built by Matthias Baldwin, in 1834; it had wooden driving wheels and used wood for fuel.

In 1834 an emigrant's boat from the North Branch of the Susquehanna passed over the inclined planes on trucks while the family was in it. It was launched again at Johnstown, reached Pittsburgh, was run into the Ohio, floated down to Cairo, and was towed up the Mississippi to St. Louis.

Other emigrants, who had no boats of their own, were so numerous that second-class passengers were operated for them. Through tickets were sold from Philadelphia to Nashville or St. Louis for thirteen dollars, not including meals, and two weeks were required for the trip.

2. A great line from Philadelphia to the Junction of the Tioga River with the North Branch of the Susquehanna on the boundary of New York State, where communication was made with the Erie Canal. This line diverged from the former at the mouth of the Juniata and passed through Liverpool and Selinsgrove, Northumberland, Danville, Berwick, Wilkes-Barre, Pittston, Towanda, and Athens. It tapped the rich Wyoming Valley coal region and much fertile agricultural country. The total distance was 324 miles, of which only 81 were by railroad. It was called the North Branch Canal. Water was first let in November 29, 1830. There were seven locks in the 55 miles from Northumberland to Nanticoke, the rise being 68.89 feet. This stretch cost \$1,096,178.34½.

3. The West Branch Canal ran from the Forks at Northumberland, on the former system to the mouth of the Bald Eagle Creek, passing through Milton, Muncy, Williamsport, and Lock Haven, tapping rich farming regions, opening the valuable iron regions of the Bald Eagle Valley, and the heavy lumber and bituminous coal of the upper West Branch Valley. The distance from Northumberland to Muncy Dam was 24½ miles, and it had six locks, the rise being 41 feet. Water was first let in November 30, 1830. It cost \$421,771.00. The Lycoming line extension contract, Muncy Dam to Bald Eagle, was let June 29, 1831; was completed in 1835, at a cost of \$1,078,041.99¼.

The Lewisburg Cross Cut was also authorized at the same time as the extension of the West Branch. There was a great celebration when it was completed, October 26, 1833, at a cost of \$158,423.86. It consisted of a dam across the Susquehanna River and three locks and three-fourths of a mile of canal. Formidable politicians were resident in old Union County in that day. There is much doubt if such consideration would be shown today, even with all the cunning of our modern politicians.

Northumberland was an important point upon the canal system, as the amount of traffic was considerable and a great sum was collected in tolls at the outlet lock of both the North and West Branch divisions.

4. The improvement of French Creek united that stream with Lake Erie.

5. The Delaware Canal.

While the State Government erected the greater number of canals, as well as the longer mileage, many of them were constructed by corporations.

During the active days of canal transportation there were sixteen divisions, consisting of a total length of 978 miles. After the railroads began to buy up these rivals

it was not long before all but a few were actually owned or controlled by them. By 1875 there were only 741 miles of canals, and by the end of the century less than 200 miles in operation.

Niles declared in 1829 that "the public mind is every day more and more settling into a belief that railroads will supersede canals"; but there he immediately mars his reputation as a prophet by remarking that "we rather think that from improvements now presented, locomotives will never come into general use. The ascent of considerable heights," he continues, "over which railroads shall pass will possibly be assisted by stationary engines, or the use of additional horse power."

Canal Lotteries—By the act of April 17, 1795, the presidents and managers of the Schuylkill and Susquehanna Navigation and the Delaware and Schuylkill Canal Navigation companies were authorized to raise by means of a lottery a sum of \$400,000 for the purpose of completing the works cited in their acts of incorporation, under a prohibition that neither of them should form the same into capital stock, upon which to declare a dividend or profits. An act passed March 4, 1807, authorized the said companies to raise their respective sums separately, subject to the prohibition as to dividends.

The two companies were consolidated by act of April 2, 1811, into a corporation known as the Union Canal Company of Pennsylvania. The new company was authorized to raise money by loan to complete the canal and to use the proceeds of the lotteries already authorized, and by the twenty-eighth section of the act authority was given to raise the residue of the original sum equal to \$340,000 by a lottery. By the act of March 29, 1819, the proceeds of the above lottery were pledged as a fund for the payment of an annual interest of six per cent. upon the stock of the company.

By these and subsequent acts it appears that the lottery grants were given in the first instance to the two companies, and afterwards continued to the Union Canal Company to aid and encourage the construction and completion of a canal and lock navigation uniting the waters of the Susquehanna and Schuylkill. In consequence of these lottery grants, individuals were induced to invest their funds in the furtherance of the work, and loans were made upon the credit of the capital stock and the profits of the lotteries.

There was much sentiment against these lotteries and as there were laws in force for suppressing and preventing lotteries, there was objection made when the extension of this lottery was brought to the General Assembly. The Committee on Ways and Means, February 9, 1828, reported that it was inexpedient to resume the lottery grants to the Union Canal Company at this time and further resolved, "That the committee be instructed to bring in a bill to regulate lottery brokers, and to restrain the sale of lottery tickets within this Commonwealth."

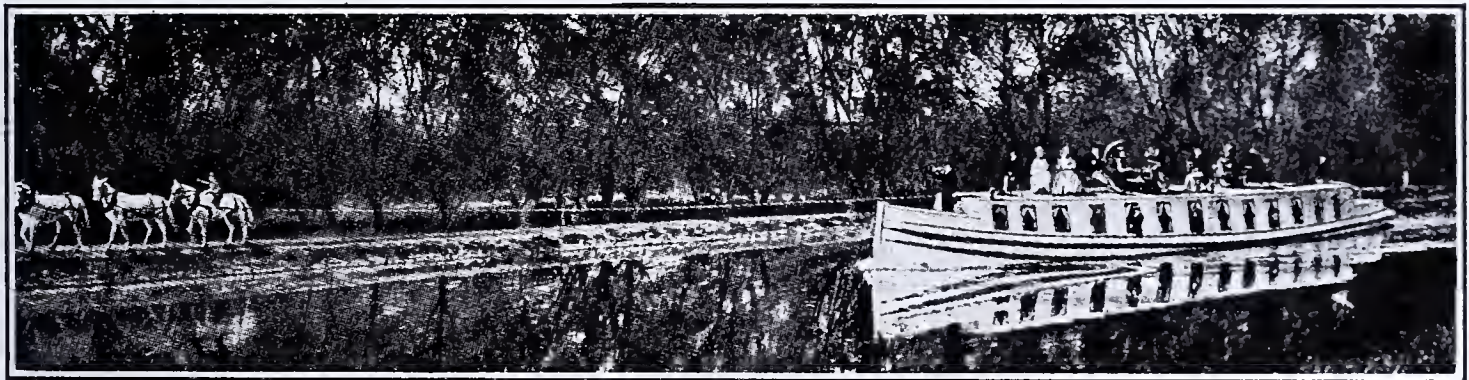
Incidents—There were many incidents connected with the canal which are of unusual interest. The following are a few from the newspapers of those days:

The "Crawford Messenger," December, 1828, stated that a canal boat was launched at that place on the 28th of November, which was built of materials that were growing on the banks of French Creek the day before. The boat left Meadville for Pittsburgh on the 30th, having on board 20 passengers and 300 reams of paper manufactured of straw.

During October, 1829, Hazard's "Register" published this article:

"It is with much pleasure we are enable to announce to our readers, from undoubted authority, that the water is now flowing down the Susquehanna division of the Penna. canal. The water was first introduced two weeks since, and is now three feet high at Selinsgrove, and last Saturday had passed down the canal as far as Liverpool, and is gradually passing on; the whole line being in complete order to receive the water. No break or defect of any kind has been found, though the water now occupies 27 miles of canal, a circumstance highly honorable to the talents and attention of Mr. Guilford, the engineer, and to the Contractors, who executed the work. Boats are frequently passing with parties of pleasure from Selinsgrove to Sunbury & Northumberland."

The "Miltonian," July, 1830, says: "The 'Miltonian' canal boat, Capt. James Blair, returned from her trip on Tuesday last, after an absence of six weeks. She left here in May with 1,000 bushels of wheat for Philadelphia, delivered her cargo



Canal Boat

in prime order; took in a load of oats for Pottsville; loaded at that place with coal for Philadelphia; and has now safely returned to our shore from the latter place with 20 tons Nova Scotia plaister. She has had a prosperous trip."

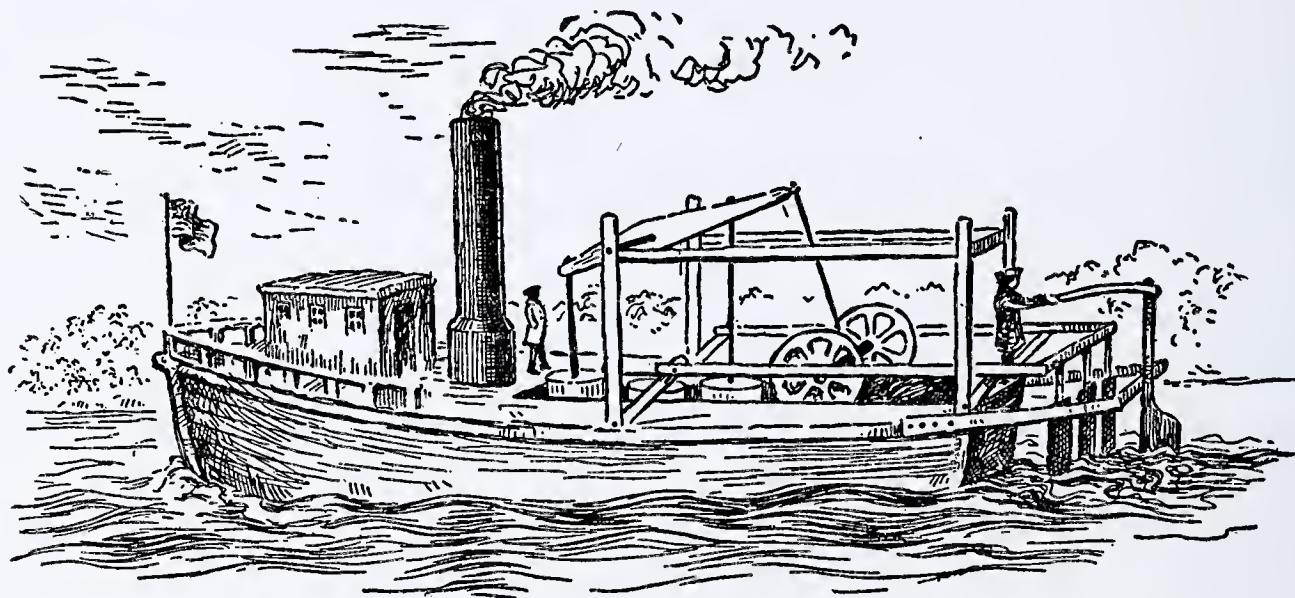
The "Sunbury Gazette," December, 1831, says: "The canal boat 'Sunbury,' owned by Mr. H. Yoxthimer, a Sunbury merchant, made a trip from Sunbury to Philadelphia & return in twenty days."

The "Miltonian," May 13, 1831, says: "In the spring of 1831, the first six boats to arrive at Milton port from Philadelphia carried on an average 20 tons each, at an average cost of \$10. There was used 6 horses, 12 men and 6 boys. Had horse transportation been used for this merchandise it would have required 60 wagons, 60 men and 240 horses, at \$1.50 per cwt., and would have cost \$3,600, or three times as much as by canal."

The "Columbia Spy," April 13, 1833, says: "On Tuesday last, arrived at this place, the Union Canal boat, 'Cordelia,' of Reading, Frill, Master, in seven days from Philadelphia, *via*. the Union Canal—with merchandise for Dominick Eagle. The 'Cordelia' is the first and only boat that ever arrived at this place from the city through the canal. We understand that another boat, with merchandise to the same firm, left Philadelphia on Thursday. Ten years ago the idea of an artificial water communication between this and Philadelphia would have been looked upon as a chimera of the brain—and unworthy of attention."

"Pittsburgh Gazette," March 24, 1834, says: "We have, today, the pleasure to announce the arrival of the first lot of goods, by the way of the Portage Railroad. It was the packet boat, 'General Lacock,' Captain Craig, arrived this morning from Johnstown, with goods in thirteen days from Philadelphia."

Steamboats—The steamboat is a Pennsylvania product. The long controversy between John Fitch and Robert Fulton can make no difference, as both were Pennsylvanians, although the former was not a native, his experiments were made here on the Delaware, and while Fulton was a native of Lancaster County, his practical steamboat was launched on the Hudson. There were other Pennsylvanians who early experimented with steam propulsion. The story of the unfortunate Fitch is an interesting contribution to the history of Pennsylvania. At the outbreak of the Revolutionary War he became a gunsmith for the American troops, with whom he was quartered at Valley Forge. It seems that this was his best situa-



John Fitch Steamboat

tion, for he had been born on a farm in Connecticut, January 21, 1743, and although so small in stature and weak in body he could hardly work, yet was compelled to labor as a common farm hand. His love of knowledge was remarkable and at the age of seventeen he had studied surveying, when he left home to seek his fortune. At first he tried the sea, but found it a hard service, and apprenticed himself to a clockmaker. This was an unhappy experience, but he was able to start in business

at the age of twenty-one. At twenty-five he married unhappily, and soon abandoned his home to become a wanderer. He managed to earn a precarious livelihood by roving about the country cleaning clocks from house to house.

When the Revolution broke out he did his bit, and near the end of the war he set out for the West on surveying and trading tours. He was captured by the Indians, two of his companions were killed, nine were taken prisoners, and all his goods were destroyed. Fitch was fortunate to escape with his life, and, after severe trials, escaped from captivity and returned to Neshaminy, Bucks County, Pennsylvania, where, in 1785, he completed his first model of a steamboat. This first model had wheels at the sides, but on July 20, 1876, he propelled a boat with a steam engine of three-inch cylinder with paddles or oars. The boat moved very slowly up the Delaware; the engine being too small for the hull, and a clumsy and incomplete machine. He did, however, succeed in demonstrating the possibility of a boat moving upon the water by a steam engine. A German clockmaker of Philadelphia, Henry Voight, helped him make this engine and boiler.

From this experiment he persevered in making every effort with the Legislature of Pennsylvania and the Continental Congress to obtain financial assistance, with only the usual ill success of inventors, obtaining no money, but gaining the reputation of being insane.

In face of these discouragements and neglect Fitch succeeded in constructing a vessel, forty-five feet long and twelve feet beam, with an engine of twelve-inch cylinder, which made a successful trial trip on the Delaware, at Philadelphia, August 27, 1787. Members of Congress, the Pennsylvania officials and a vast crowd of people witnessed this trial. During the next two years he improved greatly on the invention.

In 1790, Fitch ran a boat between Philadelphia and Burlington with a speed of eight miles an hour, going up one day and returning the next; on Sundays it made a return trip to Chester. A timetable, with rates of fare, appeared in the Philadelphia newspapers from June to September for several years. He received a patent for his steamboat April 23, 1791. Misfortune, however, dogged poor Fitch's steps, his supporters fell away; and, in 1793, he went to France to construct a steamboat, only to find his project frustrated by the Revolution there. It is said that his plans and specifications were deposited with the American Consul at L'Orient, who for several months entrusted them to Robert Fulton; and the latter's steamboat certainly was, in 1817, declared by a committee of the New York Legislature, to be "in substance the invention patented by John Fitch in 1791."

In 1794 Fitch worked his passage home to America as a common sailor. Two years later he produced another steamboat from a ship's yawl, which was propelled by a screw propeller. In 1798, he operated a three-foot model of a steamboat upon a small stream in Bardstown, Kentucky. Here he gave up his struggle, and prophetically said: "You and I will not live to see the day, but the time will come

when the steamboat will be preferred to all other kinds of conveyance; when steamboats will ascend the western rivers from New Orleans to Wheeling; when steam-

boats will cross the ocean. Johnnie Fitch will be forgotten, but other men will carry out his ideas, and grow rich and great upon them."

Fitch was taken ill in June, 1798, and his physicians prescribed opium pills, of which he was to take one each day. Instead of this, on July 2, he took twelve at once, and died in a tavern, without a relative or friend near him, and the inventor of the steamboat lies in an unmarked grave in Bardstown, Kentucky.

Robert Fulton, who was born on a farm in Little Britain Township, Lancaster County, in 1765, demonstrated the first successful commercial steam vessel August 17, 1807, when he



Birthplace of Robert Fulton, Near Quarryville

opened the throttle and the "Clermont" slowly, but surely, moved against the swift current of the Hudson River.

Steamboat on Western Waters—The building of the "New Orleans," the first steamboat to run on western waters, at Pittsburgh, in the year 1811, was the most important event that had occurred in the realm of commerce for many years, and did more than any other agency for the development and industry of the West. Robert Fulton, with his partners, Robert Livingston and Nicholas J. Roosevelt, contemplated the project of operating steamboats on the Ohio, and arranged to make a thorough investigation of all conditions the entire length of the rivers from Pittsburgh to New Orleans. In May, 1810, Mr. Roosevelt, accompanied by his

wife, arrived in Pittsburgh and built a flat boat specially suited to the purpose of the voyage and set out for New Orleans, where he arrived six months later. He noted all the problems, gauged the water, measured the velocity at different seasons, and consulted with pilots and boatmen, who passed their lives on these waters. All were of the same opinion, that steam would never be able to resist the current of the waters. Nothing that he had seen or heard, however, shook the confidence of the experienced Roosevelt, and his report impressed Fulton and Livingston with his own convictions. In the spring of 1811 Roosevelt returned to Pittsburgh to superintend the building of the first steamboat that was to navigate on the western waters. The boat was named the "New Orleans" when it was launched, March 17, 1811; it cost \$38,000. This first steamboat was one hundred and thirty-eight feet in length, with twenty-foot beam. The engine had a thirty-four inch cylinder and the boiler and other parts of the machine were in proportion. There were two cabins, one aft for ladies and a larger one for gentlemen.

On October 20, 1811, the "New Orleans" began her voyage from Pittsburgh to New Orleans. Mr. and Mrs. Roosevelt were the only passengers. Besides Captain Baker and Pilot Andrew Jack, there were six hands, two female servants, a man waiter and a cook. The people of Pittsburgh turned out in great numbers to witness the departure of the steamboat, the voyage of which was to change the relations of the western country.

Public dinners were given to Mr. Roosevelt at Cincinnati and Louisville, when complimentary toasts were drunk, but there yet remained a doubt as to the steamboat's ability to navigate against the current. Mr. Roosevelt dined his hosts on board and demonstrated that the "New Orleans" could make good headway up stream.

The voyage was not devoid of danger, for the passage over the Falls at Louisville, followed by extreme darkness, the pursuit of Indians, and an accident of fire on board, which was happily extinguished before much damage was done, were the daily perils. New Orleans was finally reached and the trip was a success. The "New Orleans" plied between Natchez and New Orleans as a common carrier until the winter of 1814, when she struck a snag and was lost at Baton Rouge.

After the demonstration of the practicability of steam navigation of the rivers by the "New Orleans," other steamboats were built at Pittsburgh. Nor has this feature of the commerce of Pittsburgh and region disappeared, for to this day thousands of steamboats carry coal, iron, and other products of that industrial beehive to the markets below. In 1814 one of the Ohio steamboats, called the "Enterprise," carried a cargo of guns and cannons for Jackson's army from Pittsburgh to New Orleans.

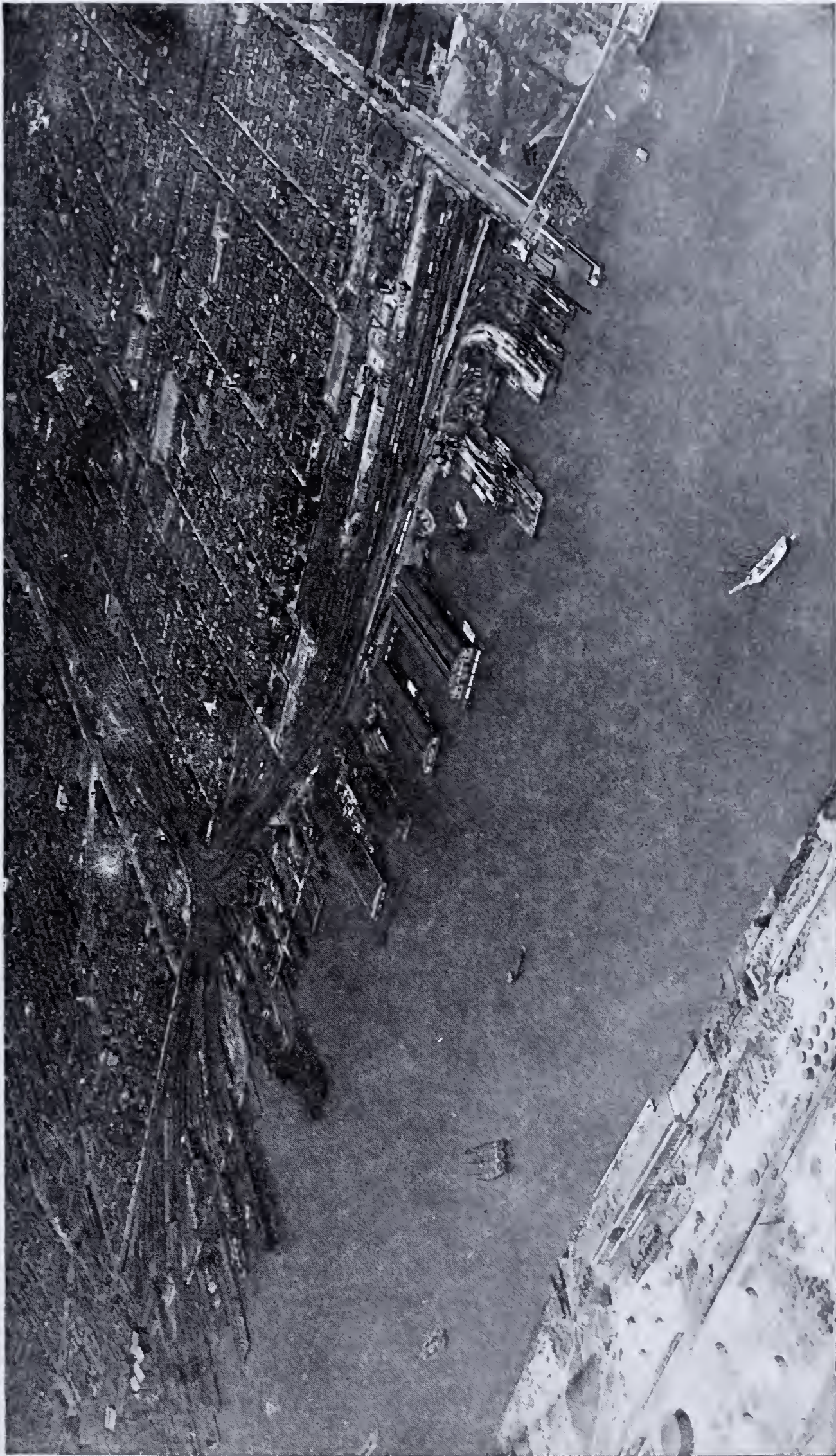
Early Attempts With Steam Navigation—Even before the advent of canals or railroads the enterprising merchants of Baltimore sensed the importance of facilitating the commerce along the great Susquehanna River. They believed it

would materially enhance their volume of business, especially in lumber, iron, grain, and whiskey, if the river would be freed of such obstructions as impeded or hindered navigation. Large sums of money were expended in removing rocky channels in the river below Columbia, so as to admit the passage of arks and rafts downstream on their way to tide water. A canal had been constructed from Port Deposit, northward, in order that the returning craft might avoid the shoals and dangerous reefs along the first ten miles above tide water.

In spite of all these improvements no satisfactory way had been found which would return to the producers of the Susquehanna Valley such articles of commerce and merchandise as they would naturally require in return for the raw products of the forest, field and mine. The authorities of Pennsylvania were also awake to the situation, as were the citizens. Several attempts had been made to have a complete survey of the river and estimates of the cost of the work required to make the great river navigable.

To Baltimore, more than to Pennsylvania, belongs the credit of an actual attempt to establish steamboat navigation. In 1825 a small steamboat, named the "Susquehanna," was built in Baltimore and, when launched, was towed to Port Deposit. The "Harrisburg Chronicle" said: "The 'Susquehanna' was expected at Columbia on Sunday night. Tuesday's reports were that she had not got to Columbia. Eye witnesses to her progress put the matter to rest on Wednesday; they had seen her a short distance above the head of the Maryland Canal, with a posse of men tugging at the ropes, and when they had tugged nine miles gave up the job. So ended all the romance about the 'Susquehanna.' She drew too much water (twenty-two inches) for the purpose and started at the wrong point. Watermen say that the crookedness of the channel, with the rapidity of the current, makes it utterly impossible for a steamboat to ascend the falls between the head of the canal and Columbia." The "Chronicle" article further says: "We have a report that Mr. Winchester, of Baltimore, has contracted for the building of a steamboat at York Haven. We also learn that the York Company are making progress with the sheet-iron steamboat, and that she will be launched about the 4th of July." This sheet-iron boat was called the "Codus," and early in April of the next year ascended the river as far as Binghamton, after which she returned to York Haven. Her captain, a Mr. Elger, reported that navigation of the Susquehanna by steam was impracticable.

Either the original "Susquehanna" renamed, or another steamboat built by the Baltimore promoters, and named "Susquehanna and Baltimore," was put on the river and operated above Conewago Falls by Captain Cornwell, an experienced river pilot. She was accompanied on her trial trip on this portion of the river by a board of commissioners of the State of Maryland, Messrs. Patterson, Ellicott and Morris, three distinguished citizens of Baltimore. Captain Cornwell had already in March made several successful trips as far up as Northumberland and Danville on the North Branch and to Milton on the West Branch, returning to York Haven without accident.



Typical Modern Piers in Philadelphia

Courtesy Philadelphia Chamber of Commerce

April 17, 1826, the boat started from York Haven, having in tow a large keel boat capable of carrying a thousand bushels of wheat, and proceeded on her fatal trip, arriving at the Nescopeck Falls at 4 o'clock on May 3. At these falls there was an outer and an artificial inner circle of shallow water for the accommodation of rafts and arks. Captain Cornwell decided, after consulting with other river men on board, to try first the main, or deep water channel, and, the captain argued, that if the boat would not stem it, that he could then drop back and try the other one. The boat made a halt in a small eddy below the falls on the east side of the river and some of the passengers went ashore; this was the case with the Maryland commissioners. The boat was directed into the main channel and had proceeded perhaps two-thirds of the distance through the falls, when she ceased to make further progress, the engine was stopped and she was permitted to drift back to the foot of the rapid, when she struck upon a wall dividing the artificial from the main channel, and at that instant one of her boilers exploded. The scene was as awful as the imagination can picture. Two of the passengers on board, named John Turk and Heber Whitmarsh, raftmen from Chenango, New York, were instantly killed; William Camp, a merchant from Owego, was fatally scalded by escaping steam. Dave Rose, of Chenango, New York, was fatally injured. Quincy Maynard, the engineer, as stated in the account published in the "Danville Watchman," one week after the occurrence, was not expected to recover. Christian Brobst, of Catawissa, and Jeremiah Miller, of Juniata, were seriously injured. Messrs. Woodside, Colt and Underwood, of Danville, were more or less injured, as were Messrs. Barton, Hurley, Foster and Colonel Paxton, of Catawissa, and Benjamin Edwards, of Braintrim, Luzerne County. It is said by somebody on board that at the time of the explosion a passenger was holding down the lever of the safety valve, but why this should be done after the boat had ceased her efforts to pull through, is difficult to conjecture. Thus ended the second attempt to navigate the Susquehanna by steam power.

Railroads—While canals and slack water navigation entered almost exclusively into the system of internal improvements designed by Pennsylvania, and the discussion of projects for the construction of artificial waterways received a large share of public attention, there were also those who regarded railroads as most likely to confer permanent advantages and result in benefits commensurate with their cost. The natural features of the State had much to do with this opinion. It had not yet been demonstrated that canal construction was feasible except in immediate proximity to a river or other source of water supply, and hence railroads received consideration as a means of communication between the valleys of the Schuylkill and Susquehanna.

The first suggestion in Pennsylvania of the construction of railways for the purpose of transportation was made in the "Aurora," Philadelphia, in January, 1801, in an article relative to the construction of canals. In that article it was

stated that "wooden railways might profitably supercede canals." Another writer in the same paper recommended that railroads should be of iron instead of wood. Pennsylvania had a hard struggle to become reconciled to the railroads. Opposition to them was more bitter and prolonged in the Keystone State than elsewhere. Nothing came of the earliest attempts to build railroads.

Pennsylvania, however, has been intimately connected with the development of railroads in America. The first practical railroad was constructed in Delaware County, the first locomotive ran in Honesdale, the first successful American locomotive was built in Philadelphia, the sleeping car was first perfected on the Cumberland Valley Railroad, the first combination of water and rail route and the first portage railway were over the Allegheny Mountains, the earliest tunnels in America were built in Pennsylvania, the largest bridges, the largest air brake manufacturing plant in the world, the steel freight, passenger, and oil tank cars were invented and built here, the first rails were rolled in Pennsylvania, and numerous other interesting and valuable engineering triumphs were to be found in this Commonwealth. Today locomotives, cars, rails, steel bridges, and products of other great Pennsylvania industries keep the railroads of America moving.

First Steam-propelled Carriage—Oliver Evans was undoubtedly the pioneer in America in the invention of a steam-propelled carriage, and, although he did not engage in the construction of any locomotive, he was the first to suggest the possibilities of a steam railway between Philadelphia and New York.

Evans was the son of Philadelphia's first Episcopalian minister, and stands out as a man of originality, invention and enterprise. He was apprenticed to a wheelwright, and before he had reached the age of manhood the construction of a land-carriage to be propelled without animal power began to occupy his attention. At the age of twenty-one he invented a machine for making cardteeth. Two years later he invented an elevator, conveyor, drill, hopper-boy and the descender, the application of which to mills worked by waterpower effected a revolution in the manufacture of flour. In 1786-87 Evans obtained from the legislatures of Pennsylvania and Maryland the exclusive right to use his improvements in flouring mills. It was about this time he began the construction of a steam engine which differed in form, as well as in principal, from those in use. He applied his engine to flouring mills. This was the first steam engine constructed on the high-pressure principle, and to Evans rightfully belongs the merit of the invention, although it has been common to assign it to Vivian and Richard Trevithick, of England, who had had access to Evans' plans.

By order of the Board of Health of Philadelphia, Evans constructed the first steam dredging machine used in America. It consisted of a scow, with a small engine to work the machinery to raise the mud. The machine, which he named the "Orukter Amphiboles," or "Amphibious Digger," propelled itself on wheels from Sixteenth and Spring Garden streets to the Schuylkill River, a distance of one and

a half miles, where, after its launching, it was propelled by a rear paddle wheel to the Delaware and up that river sixteen miles, passing all the vessels that were under full sail. This, it should be observed, was years before Fulton started his "Clermont" up the North River.

Evans' experimental trip was made on September 13, 1804,* and is believed to have been the first instance in America of the application of steam power to the propelling of land carriages. Evans predicted the time when such carriages would be propelled on railways of wood or iron. He was ahead of his time, and unable to convince the financiers of the day that there were great possibilities of profit in the development of steam transportation, and he could not realize his hope of constructing a railroad. He was desirous of building a railroad between his home city of Philadelphia and New York, but was prevented by the lack of money.

Early Railroads—Originally railroads were called tramroads, and are known to have been used in England as early as 1730. These primitive roads bore little resemblance to the railroads of the Civil War period, and no resemblance whatever to the modern railroad of the present day.

Soon after the construction of tramroads the builders, in order to render more durable the parallel wooden rails, began to protect their tops with strips of iron, and in 1738 some enterprising genius produced a rail made wholly of iron—an iron rail—from which was derived the name railroad.

Although tramroads were in frequent use in England, it was not until 1801 that experiments of that character were tried on this side of the Atlantic; and, if accounts are true, our own State of Pennsylvania had the honor of pioneership.

What is believed by many to be the first railroad in the United States was built in Ridley Township, Delaware County, in 1801, by Thomas Leiper. The fact is that it was a tramway and not a railroad. It was built for the transportation of stone from his quarries on Crum Creek to his landing at tidewater on Ridley Creek, a distance of nearly one mile. The ascents were graded inclined planes, and the superstructure was made of white oak with cross-ties and string pieces. The cars or trucks were on cast iron wheels with flanges. The rails were of wood, and, of course, soon yielded to the heavy friction of the car wheels.

This first experimental railroad was superseded by the Leiper Canal, which passed from the upper quarries down Crum Creek to the landing, and was built by

*In an article sent to the newspaper Mr. Evans said in part: "The time will come when people will travel in stages moved by steam engines at fifteen to twenty miles an hour. A carriage will leave Washington in the morning, breakfast at Baltimore, dine at Philadelphia, and sup at New York on the same day. Railways will be laid of wood or iron, or on smooth paths of broken stone or gravel, to travel by night as by day."

As early as 1773 Evans publically stated that he could by steam drive wagons, mills, etc. Finally, he published a bet of \$3,000, engaging "to make a carriage run upon a level road against the swiftest horse to be found." None took him up. Men of science pronounced the idea chimerical, and said the motion would be too slow to be useful. About this time Evans also labored to induce proprietors of turnpikes to introduce steam carriages upon their roads, but none followed his counsels.

He wrote "The Young Steam Engineer's Guide" and "The Young Millwright's Guide," a work which remained a standard many years after his death. Evans has sometimes been called the Watts of America. Undoubtedly he was one of the most ingenious mechanics that America ever produced. He died April 25, 1819.

the Hon. George G. Leiper, the eldest son of Thomas Leiper, in 1828, and continued to be used until 1852, when it in turn was succeeded by a modern railroad.

At Bear Creek furnace, in Armstrong County, another such road was in operation in 1818.

A few Pennsylvanians, who were in advance of the times, urged the Legislature to take some action to encourage the system of internal improvements by the construction of railways.

The first proposition for the incorporation of a company to build a railroad was made by John Stevens in 1822. His petition to the General Assembly of Pennsylvania was to build a railroad from Harrisburg to Pittsburgh. Nothing was done in the matter that year, but in 1823, an act was passed March 31, to incorporate "The President, Directors and Company of the Pennsylvania Railroad Company," with authority to lay out a railroad from Philadelphia to Columbia, in Lancaster County. This was the first railroad act passed in Pennsylvania. The preamble said:

"WHEREAS, It hath been represented by John Stevens, in his memorial to the Legislature, that a railroad from Philadelphia to Columbia would greatly facilitate the transportation between those two places—suggesting, also, that he hath made important improvements in the construction of railways—and praying that, in order to carry such beneficial purposes into effect, himself and associates may be incorporated."

It was ordered that John Connelly, Michael Baker, Horace Binney, Stephen Girard, and Samuel Humphreys, of Philadelphia; Emmor Bradley, of Chester County; Amos Ellmaker, of Lancaster City; and John Barbour and William Wright, of Columbia, should be constituted the president and directors of a company to be called the "Pennsylvania Railroad Company."

Connelly was named as president and John Stevens was appointed superintendent of the projected road. The law granted a term of fifty years for the existence of the company, with power to lay out a railroad from Philadelphia to Columbia not more than forty feet wide, to be located so as to do the least damage to private property.

This was the first effort made in the United States to construct a railroad of such length, and even antedates the construction of canals by the State of Pennsylvania. At the same session the House passed a bill to incorporate a company to build a railroad from Harrisburg, but it was not successful in the Senate.

The projectors of the Columbia railway did not have in view the probable construction of a canal with a terminus at Columbia, but they wished to divert the large and growing trade which found its way down the Susquehanna River to Columbia in keel boats and arks from going to Baltimore. Mr. Stevens made a preliminary survey and estimate of the cost of construction, but nothing further was done under this charter.

On April 7, 1826, the Legislature granted a charter for the Columbia, Lancaster and Philadelphia Railroad. It was intended to be a stock company, but for lack

of large subscriptions, the scheme was believed too great an undertaking for a private corporation, and it was thought best to appeal to the Legislature for aid.

On March 24, 1828, the Legislature authorized an extension of the Eastern Division of the Pennsylvania Canal to the mouth of Conestoga Creek, and also an examination of the route from Columbia to Philadelphia, with the view of constructing a canal or railroad, if the latter was deemed more expedient. The canal commissioners reported in favor of a railroad, with an inclined plane at Schuylkill River and one at Columbia. On June 24, 1828, Major John Wilson, principal engineer, reported that he had located twenty miles of the road east of Columbia.

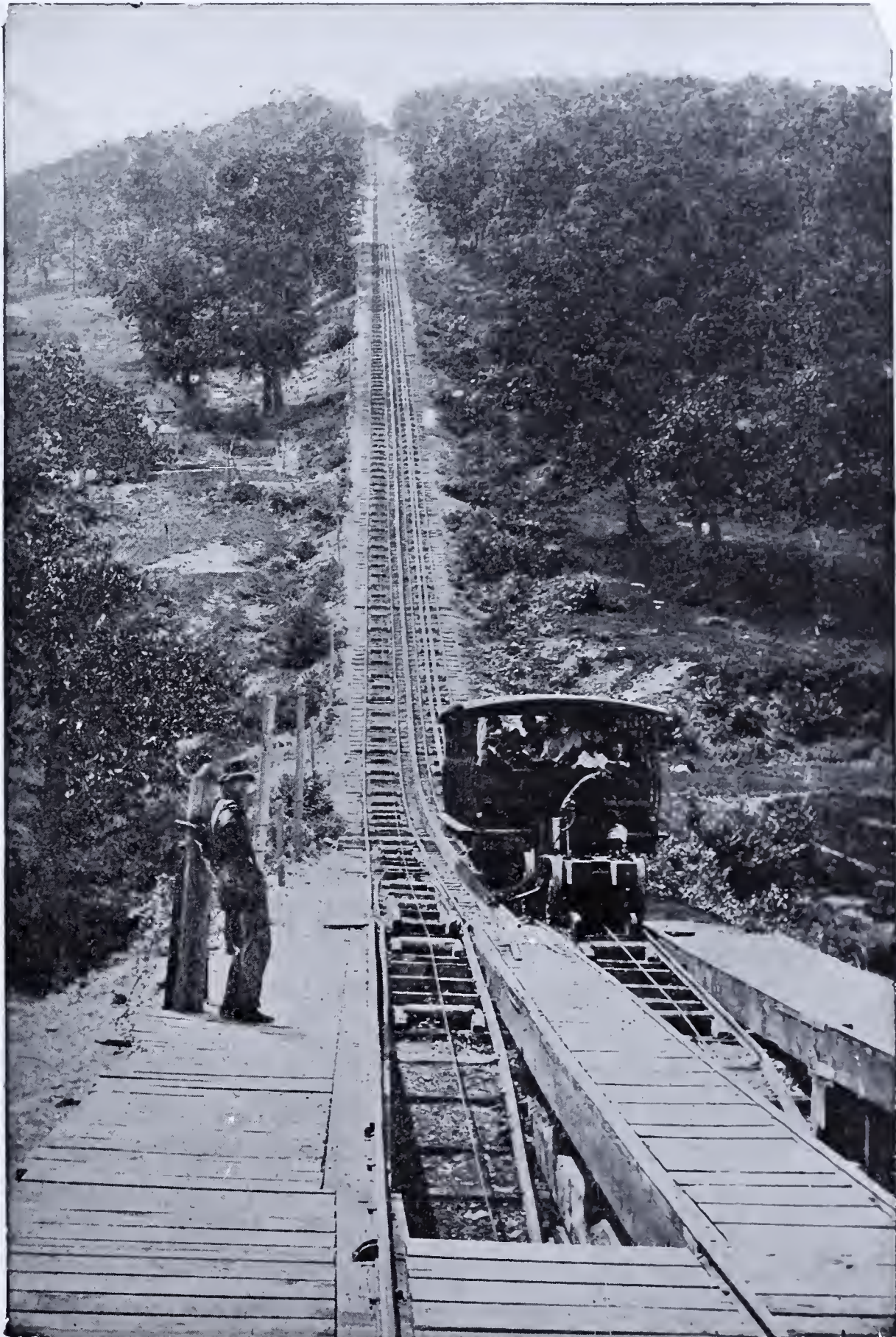


First Locomotive Arriving in Lancaster

Contracts were let for the grading January 27, 1829. On Monday, March 31, 1834, three passenger coaches, drawn by horses, arrived at Columbia from Lancaster. Three days later, April 2, the locomotive made its first trip on this part of the road.

A day was appointed for the opening of the road from Columbia to Philadelphia. At sunset on April 15, 1834, Governor Wolf, the canal commissioners, members of the Legislature, and a number of other distinguished persons arrived in Columbia *via* the canal from Harrisburg. They were driven to the head of the plane at Columbia, where cars were in waiting with locomotive attached and with steam in the boiler. The cars were taken to Lancaster in one hour. When the distinguished party passed over the road from Lancaster to Philadelphia, on April 16, 1834, they were met at every station with crowds of people, who came from farms and workshops to rejoice in the novel sight. The entire road between Philadelphia and Columbia, eighty-two miles long, cost about \$5,000,000.

Steam and Gravity Railroad—What is sometimes said to be the oldest railroad in America is now known as “The Switchback.” It was graded in 1818-19, and it is claimed that it was the first road ever to have been laid out with a surveyor’s level.



**The Mauch Chunk Switchback Railway
View of Mt. Pisgah**

The railroad was commenced in January and was put in operation June 6, 1827. It was built for the transportation of coal by gravity, the empty cars being returned to the mines by mules, the latter riding down grade with the coal in their own cars.

The mules traveled from thirty-five to forty-five miles per day, and seemed to enjoy riding in the cars. The road was nine miles in length, with four miles of siding.

In 1844 planes were built so that the empty cars might be drawn back to Summit Hill by steam power. It is a coincidence that anthracite was discovered near Summit Hill, the site of this first railroad, by Philip Ginter, an old hunter.

Since 1870 this pioneer railroad has been given over to pleasure purposes entirely, as the coal has since been transported from Summit Hill over the steam railroads by way of Lansford.

The Switchback Railway starts in Mauch Chunk and runs to the foot of a plane, when the top is reached the cars run by gravity along the top and side of the mountain to another plane, and again hoisted in the same manner, then they run on to Summit Hill and back to Mauch Chunk, a total distance of eighteen miles and through such picturesque scenery that it has often been called the "Switzerland of America."

Central Pennsylvania Railroads—The General Assembly incorporated three companies in 1826, one of which was the Danville and Pottsville Railroad Company, incorporated April 8, 1826. Construction was begun in July, 1834, on the section between Sunbury and Shamokin. The formal opening of this branch was celebrated November 26, 1835. It is now a part of the great Pennsylvania system. The Philadelphia and Erie Railroad Company was chartered as the Sunbury and Erie Railroad Company on April 3, 1837; and the Northern Central Railroad Company was formed on December 9, 1854, by the consolidation of the Baltimore and Susquehanna Railroad Company, the York and Maryland Line Railroad Company, the York and Cumberland Railroad Company, and the Susquehanna Railroad Company. The main line extends from Baltimore to Sunbury.

The original incorporators of the Sunbury and Erie Railroad Company included some of the prominent capitalists of the country, but in this case most of them were residents of Northumberland County, which brought to the project a determined local pride and enthusiasm which overcame the numerous and oftentimes discouraging hindrances to its construction.

The period allotted for the road's completion was extended from time to time, and finally, on February 12, 1846, the company was allowed until June 1, 1851, to begin construction. The road was opened between Williamsport and Milton, December 18, 1854, and between Milton and Northumberland, September 24, 1855. The occasion of the formal opening of the road from Williamsport to Milton was celebrated at both places and honored with the presence of the Governor-elect, Hon. James Pollock, of Milton, and other distinguished personages. The Philadelphia Council and many prominent persons of that city arrived at Milton, and a large delegation from Williamsport, who had made the trip to Milton to act as an escort for this distinguished party to Harrisburg, where the principal celebration was to be held. Governor-elect Pollock welcomed the guests at Milton, to which response

was made by Hon. James Cooper, Speaker of the Senate, and others. A cane, wrought from wood in Independence Hall, and prepared by his friends, was presented to Mr. Pollock.

The Sunbury and Erie Railroad was first operated by the Catawissa Railroad Company, which ran its rolling stock over the line for some time.

The railroad bridges over the North Branch at Northumberland were completed for traffic January 7, 1856, which opened the road from Williamsport to Sunbury. From this time it became a long struggle to complete the line from Williamsport to Erie, which was to be the western terminus. Borough councils and prominent citizens subscribed for stock, and various attempts were made to construct the road, but each new organization only repeated the story of failure.

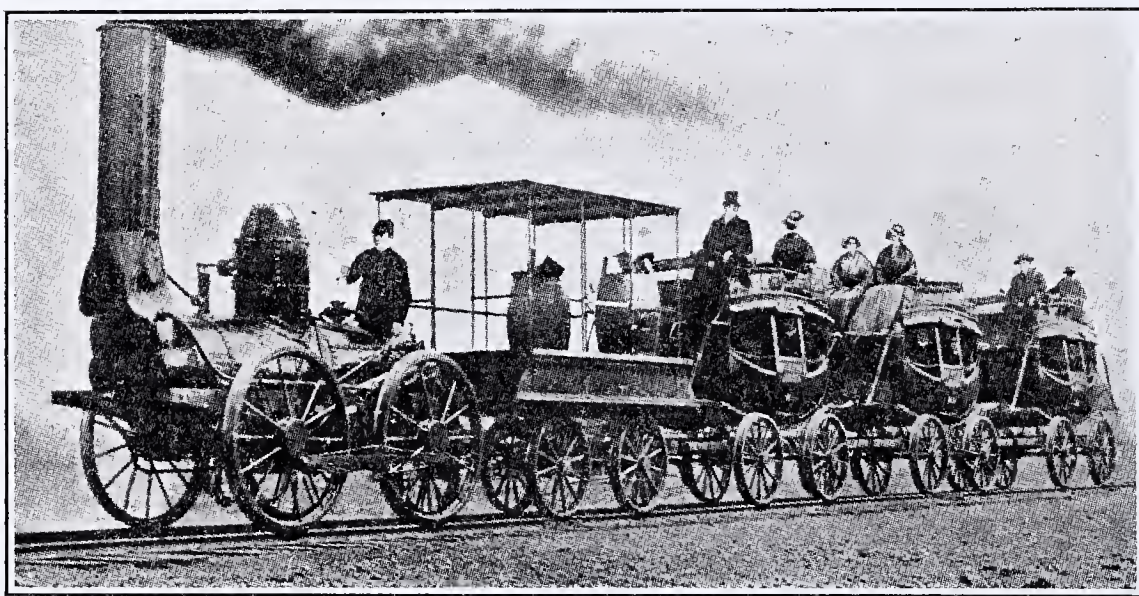
A number of very able and experienced railway men and the directors conceived the idea of virtually borrowing the credit of the State, without imposing any liability upon the Commonwealth, to aid in the construction of this road. Among them were the following citizens of Northumberland County: Henry Reader, David Watson, Montgomery Sweeney, General Robert H. Hammond, Samuel Hepburn, General Henry Frick, James Hepburn, Joseph R. Priestley, Hugh Bellas, Charles G. Donnel, Judge Alexander Jordan, Ebenezer Greenough, Edward Gobin, John C. Boyd, Daniel Levy, Henry Yoxthimer, Henry Masser, William Forsyth, Dr. James Dougal, and Frederick Lazerus. Their proposition was that the various canals remaining in the ownership of the State should be sold to the Sunbury and Erie Railway Company for \$3,000,000, giving the railway company the right to sell or mortgage the several canals, as might be deemed best, the proceeds to be applied to the construction of the Erie line, and the State to accept a mortgage upon the line for the \$3,000,000 to be paid for the canals. It was believed this would provide sufficient funds to complete the line, and when accomplished the mortgage held by the State would be abundant security against loss to the Commonwealth.

A bill to enable this sale of the canals was read in place in both House and Senate and an earnest battle ensued as the members of the canal board were not willing to be shorn of their immense powers, which would result if the State sold the canals. The Republicans in the House supported the bill; the personnel of the canal board was entirely Democratic. No community in the State would benefit more by the completion of the link from Williamsport to Erie than would Philadelphia, and the great interests of that city soon brought a solid support in both House and Senate in favor of the bill. Many Democrats whose districts were traversed by the proposed road also fell into line, so that in spite of desperate opposition, the bill finally passed the House by a decided majority, and gained the narrow margin of one vote in the Senate. Governor William F. Packer was a resident of Williamsport, and, of course, was intensely interested in the measure.

The bill reached the Governor only three days before final adjournment, and when he examined it, the Governor discovered a vital error in phraseology which had been overlooked, but which would result in serious embarrassment in executing

its provisions. He could not return it with his objections, as it could not be passed over the veto; there was not time for the passage of a new bill, and the bill could be amended in the hands of the Governor only by the adoption of a joint resolution instructing such change. A joint resolution was required to lay over a day under the rules and it required two-thirds vote to suspend the rule, while the delay of a day would be fatal. The matter was submitted to Speaker Longnecker, who presided with ability and dignity over the body, and he informed those who were conferring with him that a joint resolution could not be read and finally passed on the same day.

Among the prominent Democratic members was George Nelson Smith, of Cambria County, a thorough parliamentarian and one of the most popular members of the House. It was suggested to the Speaker that he call Smith to the chair. The Speaker consented, Smith took the gavel and the resolution to amend the bill was changed from the usual form of a joint resolution by saying, "Resolved, If the



An Early Railroad Train

Senate concurs, etc.," giving the appearance of a House resolution requiring simply the concurrence of the Senate. As soon as it was read the point was raised that it was a joint resolution and must lie over for a day, but Smith faced the emergency with magnificent boldness, deciding that it was

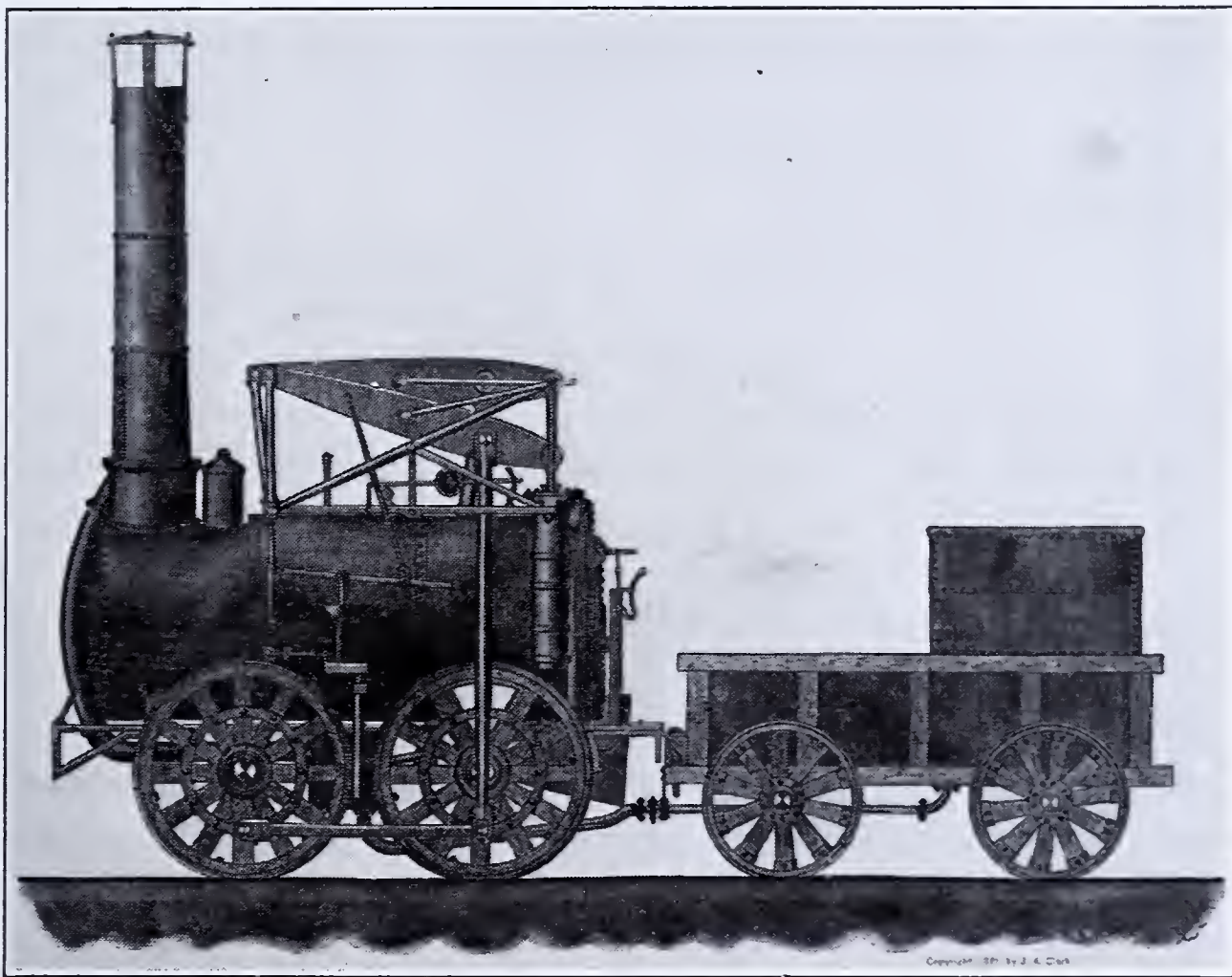
not a joint resolution and directing the final vote to be called. It was evident that a majority of the House meant to save the bill; tactics for delay would be defeated by previous question and by the aggressive action of Acting Speaker Smith the House was suddenly brought to a call of the yeas and nays and the bill was saved. The Senate had ample time for concurrence and it was given.

Even after giving the Sunbury and Erie Railway Company the benefit of the loan of \$3,000,000 the work was pushed forward under many embarrassments. It was on the verge of collapse in the general prostration of 1860, but the Legislature came to its relief by an extensive credit. The Civil War came with its quickening of business and large increase of circulating medium, and the great enterprise of building a railroad through an almost continued wilderness from Williamsport to Lake Erie, a distance of nearly 250 miles, was completed October 17, 1864, and the State gained not only by the sale of its canals and the abolishment of the canal board, but the \$3,000,000 was abundantly secured to it. The new railroad brought

multiplied wealth to the State and the people that could never have been realized excepting by the construction of a great railway through the boundless riches of that great region.

The name Sunbury and Erie was changed to the Philadelphia and Erie Railroad Company by act of Assembly, March 7, 1861. The entire line of the road to Erie was opened October 17, 1864, having been previously leased to the Pennsylvania Railroad Company, January 1, 1862, for a period of 999 years.

It is coincident to note that it was during the administration of Governor Pollock that the main line of public works was sold to the Pennsylvania Railroad Company by virtue of the act of Assembly of May 16, 1857. The Governor had very strongly urged the sale of the public works, as they had become a running sore



The "Stourbridge Lion," Honesdale

of corruption, including political debauchery and the systematic plunder of the treasury. The transaction was closed June 25, 1857, when the whole line of public works between Philadelphia and Pittsburgh passed into possession of the Pennsylvania Railroad Company, the consideration being \$7,500,000.

First Locomotive in America—The first locomotive put upon a railroad in America was the English "Stourbridge Lion," which Horatio Allen operated on the Delaware and Hudson Canal and Railroad Company tracks at Honesdale, August 8, 1829. This first locomotive in the New World was one of three purchased in England by Horatio Allen, for the company of which he was assistant

engineer, and was the first of these to arrive in New York. About July 1, it was shipped up the North River to Rondout, for the Delaware and Hudson Canal Company, and thence by canal to Honesdale, Pennsylvania. The engine was placed upon the rails and everything arranged for the initial trial. A large cannon was stationed on the top of a high peak to sound the joyous occasion. On Saturday morning, August 8, 1829, the fire was kindled and steam raised, and, under the management of Mr. Allen, the "wonderful machine" was found capable of moving, to the great joy of the crowd of excited spectators. After running the locomotive forward and backward on the portion of road between the canal and basin and the high railroad bridge across the West Branch of the Lackawanna, Mr. Allen started it, with no person accompanying him, and without any car being attached, and ran it with good speed around the curve and across the bridge and up the railroad about one and a half miles, to where the railroad crossed by a common road bridge, placed too low to admit the passage of the "Stourbridge Lion" under it. Here Allen reversed the engine and ran it back to place of starting, greeted by the cheers of the people and the booming of cannon.

The "Stourbridge Lion" moved off with considerable velocity, passed the curve over the creek safely, and was soon out of sight of the large assemblage. On his return to the starting point, Horatio Allen had made the first railroad trip by locomotive on the Western Hemisphere.

Mr. Alva Adams, a mechanic, while assisting to fire the cannon, had his arm so badly shattered that amputation became necessary. This was the only accident during the eventful day.

After repeating the trial a few times, Mr. Allen removed the "Stourbridge Lion" from the track, and it was left standing by the side of the railroad, with no covering but a temporary shed roof until the winter. It was then housed in with rough boards, but no further attention was given the great curiosity during about fifteen years. In this time so many of the parts had been detached or broken that it was worthless as a locomotive. The boiler was then removed to Carbondale and the other parts sold for junk.

The failure of entire success was a great disappointment. The experiment demonstrated that the manner of constructing the railroad was not sufficiently firm and substantial for locomotives. The road had been built in the summer, the structure was of hemlock timbers, and heavy rails were notched on the caps. The timber had cracked and warped from exposure to the sun. After about five hundred feet of the straightaway, the road crossed Lackawaxen Creek on a trestle-work, thirty feet high, and with a curve of four hundred feet radius. The impression was general that the iron monster would either break down the road or that it would leave the track at the curve and plunge into the creek. This accounts for the fact that no one accompanied Horatio Allen on the trial run.

That this engine proved to be impracticable under the circumstances was caused by no defect in its construction, or the principle involved, nor did it want in per-

formance of its duties, but the fault was that roads in America had been built for horsepower alone, and we had not yet realized the change necessary for locomotives. Nevertheless, this experiment was the forerunner of the mighty race of the monsters which now traverse the country in every direction.

Philadelphia, Germantown & Norristown Railroad—Attention was drawn to the propriety of building a railroad from Philadelphia to Germantown, in a series of articles in the "United States Gazette," March and April, 1830. A public meeting was called November 13, at the house of Jacob Mason, which was attended by citizens of Philadelphia, Germantown, Mount Airy, Chestnut Hill, White Marsh and Norristown. The suggested route was from Philadelphia to Norristown; Reuben Haines was chairman and Benjamin Chew, Jr., secretary. A committee was appointed to defray the expenses of a survey. The movement was stimulated by Edward H. Bonsall, who had previously made an amateur survey of the route for the road. The committee went to work with industry, and in five weeks was ready to make a report. The route determined upon from Norristown to Philadelphia passed through White Marsh and Plymouth, and as near Germantown as practicable.

The Philadelphia, Germantown and Norristown Railroad was incorporated February 17, 1831. The rails were laid to Germantown by June, 1832, and the road was formally opened that month. For six months horsepower was employed. Much difficulty was experienced before the road was completed to Norristown. After much discussion and several acts of Assembly the road was opened to Manunk, October 18, 1834. The whole road was opened through to Norristown on August 15, 1835, when the occasion was celebrated by a great feast. Speeches were made by Colonel Thomas L. McKenney, Joseph R. Chandler, Nathan Sargent, W. Gaylord Clark, Samuel Chew, and W. D. Lewis, of Philadelphia, and General Joly, of Norristown. To this railroad is to be given the credit of introducing many important improvements in locomotive engines and other railroading necessities.

First American Locomotive—The first successful American locomotive was made in Philadelphia by Matthias William Baldwin, and completed January 8, 1831. The story of the man and his wonderful achievement is the story of one of the greatest industrial plants in the world and is full of human interest.

It was in 1829-30 that steam, as a motive power on railroads, began to attract the attention of American engineers. George Stephenson had produced a successful locomotive in England. In 1830 the Camden and Amboy Railroad Company brought across the ocean a locomotive, which was kept hidden from the public eye until it should be used. Franklin Peale, who owned the Philadelphia Museum, where up-to-date novelties were shown, wished to have a small working model of a locomotive to exhibit, and he turned to Matthias Baldwin. The two men found out where the locomotive was kept and visited the place. Baldwin was already

familiar with the published description and sketches of engines which had taken part in the Rainhill competitions in England, but he now had an opportunity to see and measure for himself an actual engine.

Baldwin made the model, completing it January 8, 1831. It was taken to the museum and on April 25 was put in motion on a circular track made of pine boards covered with hoop-iron. It drew two small cars, each holding four persons, and attracted great attention from the crowds who saw it. Both anthracite and pine-knot coal were used as fuel, and the steam was discharged through the smokestack to increase the draught. The success of the model obtained for Mr. Baldwin an order for a locomotive for the Philadelphia, Germantown and Norristown Railroad Company.

This engine when completed was called "Old Ironsides" and left the shop November 23, 1832. It stood on the rails like a "thing of life." The track was made clear in the afternoon of that day, after the passenger cars had completed their run, and steam was raised sufficient for use in twenty minutes after fire was set in the furnace. "Old Ironsides" went to the township line and returned immediately, a distance of six miles, at a speed of about twenty-eight miles per hour, it being after dark.

The next day "Old Ironsides" drew four cars loaded with passengers to Germantown, making the six miles in less than half an hour. On Monday 26th, another trip was made with six cars and passengers and in a short time the locomotive was at regular work. Its light weight, between four and five tons, did not give it that tractive power necessary to draw a loaded train on wet and slippery rails, hence the newspapers of that day termed it a "fair weather" locomotive, because the notices specified that "the locomotive built by Mr. M. W. Baldwin, of this city, will depart daily, when the weather is fair, with a train of passenger cars. On rainy days horses will be attached." The "Old Ironsides" was a four-wheeled engine, modeled essentially on the English fashion of that day. The wheels were made with heavy cast-iron hubs, wooden spokes and rims, and wrought-iron tires. The price of this engine was \$4,000, but the company claimed that it did not perform according to contract, and after correction had been made as far as possible, a compromise was effected and Mr. Baldwin received \$3,500 for his work. "Old Ironsides," on subsequent trials, attained a speed of thirty miles an hour with the usual train.

First Coal Burning Locomotive—The first locomotive that burned coal to be put into successful operation in America was made in York in 1832, by Phineas Davis, of that city.

On January 4, 1831, the Baltimore and Ohio Railroad Company offered a prize for a locomotive of American manufacture. The sum was to be awarded to the inventor of the best engine which would burn coke or coal and consume its own smoke. The engine was to be delivered for trial June 1, 1832. Davis became one of the competitors, and he built his engine, called "The York," and conveyed

it on wagons to Baltimore in time for the trial. "The York" won the competition from among five entrants, and Phineas Davis received the coveted prize. The "Baltimore Gazette" of July 31, 1832, says: "We are gratified that the locomotive steam engine, 'The York,' constructed by Phineas Davis, of York, Penna., commenced operation yesterday. It started with a train of fourteen loaded cars, carrying together with the engine tender, a gross weight of fifty tons. The whole went off in fine style and was out of sight of the depot in six minutes."

In the trial run the "York" made the thirteen miles in one hour and five minutes. Returning with only one car, it made the last mile in three minutes. The fuel used was anthracite coal. Davis' engine was mounted on wheels thirty inches in diameter, the motion for which was produced by gears. It could negotiate a curve of four hundred feet radius. Even though the engine weighed only three and a half tons, the officials of the railroad were pleased with the test, and since that time steam engines have been in use.

The Reading Company—The Philadelphia and Reading Railway Company was incorporated by special act of the Legislature of Pennsylvania, approved April 4, 1833. The charter granted to the company, December 5, following, authorized it to construct a railroad from Reading to Philadelphia. At Reading it was proposed to connect with the Little Schuylkill Navigation and Railroad, which had been incorporated in 1827, to build a railroad from Tamaqua to Reading. By a later statute the company was authorized to extend its road from Reading to Port Clinton, where connection was made with the Little Schuylkill Navigation and Railroad. It was planned primarily to transport anthracite from the Schuylkill region to Philadelphia and intermediate points, especially where a number of blast furnaces were then operating.

On December 5, 1839, the railroad was opened to traffic from Reading to Philadelphia, and on January 1, 1842, the first locomotive and train passed over the entire line between Mount Carbon in Schuylkill County, and Philadelphia. On May 17, 1842, the Richmond Branch, from the Falls of the Schuylkill to the terminal at Port Richmond on the Delaware was opened, from which time the Reading has been an important railroad. In 1853 the Philadelphia and Reading Railroad Company began the construction of the Lebanon Valley Railroad, extending from Reading to Harrisburg. The line was completed in 1858, and merged into the Reading Railroad. May 8, 1871, the parent company bought the Northern Liberties and Penn Township Railroad, in Philadelphia, control of which had been obtained in 1857.

In the period between 1859 and 1870, the Philadelphia and Reading Railroad Company commenced the systematic extension which has resulted in the development of the present Reading System. In that period the company acquired through purchase or lease twenty-six railroads. Between 1870 and 1880, thirteen more were acquired; in the next decade nine were added; from 1890 to 1900 eight were

acquired, and since 1900 four more were added, until at the present time the Reading Company, with its affiliated lines, operates 1,619.15 miles of railroad, exclusive of the Central Railroad of New Jersey, and 3.63 miles of road leased jointly by the Reading Company and the Central Railroad of New Jersey.

The Pennsylvania System—Among the several great railroad groups of America is that of the Pennsylvania System, and this corporation enjoys the distinction of having the greatest number of individual stockholders. This company grew out of the mixed canal and railroad system constructed by the State between Philadelphia and Pittsburgh.

The Pennsylvania Railroad Company, the most important carrier in Pennsylvania and in the Eastern United States, and one of the greatest and most extensive railroad systems in the entire world, was brought into existence by an act of Assembly of Pennsylvania, approved by Governor Francis R. Shunk, April 13, 1846. Letters patent were issued February 15, 1847, and the company organized March 20, but the election of officers was held and the actual beginning of this great corporation dates from March 31, 1847. Under the articles of incorporation this company was authorized to construct, equip, and operate a line of steam railroad to connect with the then known Harrisburg, Portsmouth, Mount Joy and Lancaster Railroad, and to run to Pittsburgh or to any point in Allegheny County, or to Erie, in Erie County, as its management might deem expedient.

The Erie Canal, devised by DeWitt Clinton, and constructed by David Thomas, a Pennsylvanian, had deflected the trade of the Great Lakes and the West from Philadelphia to New York, and made the latter the leading city of the Nation. It was expected that a railroad over the mountains would bring this trade back to Philadelphia and restore the supremacy of that city. In order to make sure that no outside influence should get control, the charter provided that all of the directors "shall be citizens and residents of this Commonwealth." This part of the plan failed, but the leading capitalists of Philadelphia, Pittsburgh, and elsewhere in the State, subscribed liberally to the stock of the company and from the beginning the enterprise was well backed with ample funds and equally valuable influence.

Hardly had the original road been opened for traffic before the company began to extend its lines and enlarge the field of its operations. The movement which proved of the greatest benefit to the public, and to the company itself, was in 1857, when the Legislature passed an act, May 16, directing the line of public works between Philadelphia and Pittsburgh to be sold, and the Pennsylvania Railroad Company became the purchaser. Governor James Pollock caused the sale to be made June 25, and on July 31 following the actual transfer was consummated. This transaction fixes the date from which the progressive history of the Pennsylvania Railroad Company begins. The purchase price was seven and one-half millions, and ownership was obtained for the combined State canal and railroad. [The State was relieved of a burdensome property, and at the same time these public

works were placed under the control of a corporation whose methods of management must result in great benefit to the people of the State.

The canals on the Susquehanna and its branches above the mouth of the Juniata, together with the Delaware Division, were sold the following year to the Sunbury and Erie Railroad Company, now a part of the great Pennsylvania System, and the work of extension did not cease. The Pennsylvania Railroad Company, in 1861, leased for 999 years the Harrisburg, Portsmouth, Mount Joy and Lancaster road and brought it under the Pennsylvania's management. The work of extension has ever kept pace with the opportunity to develop this great railroad system until it includes, in whole, or in part, more than one hundred lesser lines of road, with its main line, branches and spurs.

The great terminal station in Philadelphia, recently damaged by fire, was soon replaced by one of the finest railroad stations in the world, even comparable with the great Pennsylvania Station in New York City. The greatest corporation in Pennsylvania is the railroad system which so gloriously carries the name of the Keystone State into every part of the Western Hemisphere.

Cumberland Valley Railroad—Another important link in the State system of public works, destined later to become a part of the great Pennsylvania system, was the Cumberland Valley Railroad, which was formally opened from Harrisburg to Chambersburg, Thursday, November 16, 1837.

First Sleeping Cars—Many improvements in railroading were inaugurated on this great system, but none, possibly, have been more popular than the development of the sleeping cars. As early as 1839 the officers of the Cumberland Valley Railroad installed a sleeping car service between Harrisburg and Chambersburg. This first sleeping car was an adaption of an ordinary day coach to sleeping requirements. It was divided into four compartments, in each of which three bunks were built against one side of the car, and in the rear of the car were provided a towel, basin and water. The only things furnished by the railroad company were pillows and mattresses, which were piled up in one corner and dragged by the passengers to the scene of torture when required. No bed clothes were furnished and the weary passengers, fully dressed, reclined on rough mattresses with their overcoats or shawls drawn over them, doubtless marveling the while at the fruitfulness of modern inventions.

As times went on other similar cars with berths arranged in three tiers on one side of the car were adopted by various railroads, and occasional, but in no manner fundamental improvements were made on the original sleeping car of the Cumberland Valley. Candles furnished the light, and the heat was supplied by box stoves burning wood or sometimes coal. For a number of years these makeshift cars found an appreciative patronage, and temporarily served the patrons. It was nearly ten years before these sleeping cars were generally adopted by other railroads, and the innovation of bedding furnished by the railroads marked a slight progress.

Railroad Enters Pittsburgh—It was but natural that the great undeveloped wealth of the Mississippi Valley should attract those who had any vision as to the future of this vast country. This enormous wealth must be dumped into the great cities planted along the Atlantic Seaboard. General Washington, skilled surveyor that he was, early trained his eyes westward, and he spent much time in outlining plans for connecting the Potomac and Ohio rivers by means of a canal. Twenty-five years after his death the Erie Canal was opened, when the merchants of Philadelphia and Baltimore realized they must awaken or succumb.

Baltimore believed a railroad should be built to the West. The Baltimore and Ohio, first of all great railroads, shows by its name the purpose for which it was incorporated. Pennsylvania, however, undertook to connect the West by a system of combined railroads and canals. From the first both cities looked to Pittsburgh as the logical terminus of their improvements. Then began a struggle of Philadelphia-Baltimore rivalry, which lasted for forty-three years, from 1828 to 1871.

In 1828 Pennsylvania had given a charter for fifteen years to the Baltimore and Ohio, by which it could construct its line through Southwestern Pennsylvania to Pittsburgh. The members of the Legislature at that time did not consider future competition, for the State works had not been built. This act, among other onerous conditions, was discriminating in favor of traffic to Philadelphia; it also contained a heavy State tax on freight, and the company could not accept it.

The Pennsylvania State works from Philadelphia to Pittsburgh were completed in 1834. When the charter of the Baltimore and Ohio expired in 1843, the road was completed only as far as Cumberland. The company tried to obtain better terms from Pennsylvania. The residents of the western part of State were all eager for an additional outlet to the coast, but the Philadelphia politicians were unwilling to yield any concession to their Baltimore rivals.

Several years later it was admitted that the State works would never provide adequate transportation facilities to the West, even though in excess of \$10,000,000 had already been expended and the Commonwealth seriously involved. Pennsylvanians were made to realize that railroads were superior to canals and that the commercial solution of Philadelphia lay in a central railroad to Pittsburgh.

Public meetings were held in Philadelphia and elsewhere. A State railroad convention was held at Harrisburg, January 14, 1846, when resolutions were adopted favoring the Central Railroad scheme and against the Baltimore and Ohio right of way grant. The people of Pennsylvania believed since a railroad must be built it would be better for it to be run entirely through Pennsylvania and be a Pennsylvania institution. They also felt that if the Baltimore and Ohio Railroad was given a franchise, it would be next to impossible to raise money to build the Pennsylvania Railroad. Pittsburgh business interests were fearful if the Baltimore and Ohio Railroad was refused admission to Pennsylvania that road would extend its rails farther down the Ohio to Wheeling, perhaps, and thus control river

trade, which had long been enjoyed at Pittsburgh. Many meetings were held in Pittsburgh urging the support of the Baltimore bill. It must also be understood that State prejudice held back railroads from entering other States. In 1846 States rights theories were more potential than they are today.

The Baltimore and Ohio bill was defeated in the Senate February 23, 1846, by a single vote. Philadelphia rejoiced and Pittsburgh was sad. The Senate reversed itself February 26, and Philadelphia was maddened beyond reason. On April 10 the Baltimore bill passed the House, with an amendment providing that the grant to the Baltimore and Ohio should be null and void if the Pennsylvania Railroad obtained subscriptions of \$3,000,000 in capital stock, of which \$900,000 must be paid in cash by July 31. The bill passed the Senate and was signed by Governor Shunk, April 21. Every effort was exerted to procure the subscriptions, a house-to-house canvass resulting in 2,600 subscriptions. Nearly all of which were for five shares or less. Philadelphia won the struggle and the conditions were met in time. Governor Shunk issued a proclamation announcing the grant to Baltimore and Ohio Railroad to be null and void.

In 1837 a group of Pittsburgh men obtained a charter for the Pittsburgh and Connellsville Railroad. This with the design to get into Baltimore, as it would build fifty-eight miles of the route to that city. That scheme fell through, but in 1843 the charter of the Baltimore and Ohio was renewed but they did not seem to appreciate the advantage secured for them by the astute Pittsburgh business men.

The Baltimore and Ohio had completed its line to Wheeling and the Pennsylvania was about to finish its line into Pittsburgh. The Pittsburgh and Connellsville obtained authority to make connection with the Baltimore and Ohio at Cumberland. The road was opened from Pittsburgh to Connellsville January, 1857. Then came the panic of 1857 and the depression by the prospect of the Civil War.

In 1864 the stretch of ninety miles between Uniontown and Cumberland again became a political matter. Thomas A. Scott, president of the Pennsylvania Railroad, determined this link should not be built, as the last thing he wanted was a competing line in Pittsburgh.

On April 11, 1864, two bills were introduced into the Legislature. One claimed the Pittsburgh and Connellsville Railroad had misused its charter; the other incorporated a new railroad from Connellsville. The bills passed and became laws without the approval of Governor Curtin.

Judge Grier, in United States Court, June 20, 1865, held the repeal of the Pittsburgh and Connellsville to be unconstitutional. This case now became a legal battle for years and eventually got into Congress and back into the Pennsylvania General Assembly. On January 29, 1868, the Supreme Court of Pennsylvania unanimously decided in favor of the Pittsburgh and Connellsville Railroad. The next day the Legislature repealed the act of 1864. The happy ending was in spite of all litigation. Pittsburgh and the great mineral and lumber wealth along the Monongahela and Youghiogheny Valleys was opened up, and on June 26, 1871,

the Pittsburgh, Washington and Baltimore Railroad was formally opened and the long struggle for Pittsburgh ended.

Lehigh Valley Railroad—The Lehigh Valley Railroad was naturally the outcome of the great enterprises upon the Lehigh River and the anthracite regions in the neighborhood of Mauch Chunk begun by Josiah White, Erskine Hazard, and George F. A. Hauto, in 1817, for the development of the coal trade, which afterward led to the establishment of the Lehigh Navigation Company.

A company was incorporated as the Delaware, Lehigh, Schuylkill and Susquehanna Railroad Company, by act of Assembly passed April 21, 1846. On January 7, 1853, the corporate name was changed to Lehigh Valley Railroad Company. The road was opened for traffic from South Easton to Allentown, in June, 1855, and to Mauch Chunk in September, following. It was completed to Wilkes-Barre in 1865; to the State line between New York and Pennsylvania in 1866, and to Buffalo, New York, in September, 1892. In 1872 the construction of the line extending from the Delaware River at Easton to Perth Amboy, New Jersey, was commenced, and opened for traffic in 1875. In 1885 the extension to tidewater on the Hudson River at New York was projected and the road subsequently constructed and completed. The Lehigh Valley Railroad System is today a double track trunk line extending through the States of New Jersey, Pennsylvania and New York from the Atlantic Seaboard to the Great Lakes. The main line runs from New York City to Buffalo, New York, a distance of 448 miles. The entire mileage of the system is 1,392.89. The road is divided into four main line operating divisions—New Jersey and Lehigh, Wyoming, Pennsylvania, and Buffalo Divisions; also two branch line divisions, Mahanoy and Hazleton Division, covering the anthracite coal regions, and the Auburn Division, covering branch lines in the northern part of New York State.

The main shops of the company are at Sayre, Pennsylvania, where the principal buildings cover an area of more than six acres. The first president of the company was Hon. James M. Porter,* of Easton, and the principal office was in the Northampton county seat until 1856, when the stockholders voted to remove it to Philadelphia.

The Lehigh Valley, Philadelphia and Reading System, Jersey Central and Delaware and Hudson Railroad are named in a proposed merger with the New York Central, which the Federal Government believes would be beneficial to all concerned.

*President Porter, one of the organizers of the company, was the son of General Andrew Porter, a distinguished officer of the Continental Army in the Revolution. He was a lawyer and statesman, one of the founders of Lafayette College, and its president for twenty-five years. He served as judge of the Twelfth Judicial District, composed of the counties of Dauphin, Schuylkill and Lebanon, which office he resigned in July, 1840, to accept the portfolio of Secretary of War in a cabinet of President Tyler. Upon retiring from the cabinet Secretary Porter again resumed law practice in Easton. He was elected to the General Assembly, and in 1853 became judge of the Twenty-second Judicial District. He devoted much of his time to Freemasonry and served for many years as an officer in the Grand Lodge of the State. When he became president of the railroad he devoted his best effort to his high station, but upon the decision of the stockholders to remove the principal office from Easton to Philadelphia, he resigned the presidency, and was succeeded by William M. Longstreth, elected February 3, 1856. He was succeeded May 13, following, by J. Gillingham Fell, who held the office for several years, when he was succeeded by Hon. Asa Packer, who was one of the real builders of the road, and under whose leadership the system was wonderfully developed.

Delaware, Lackawanna and Western—The original main line of the present Delaware, Lackawanna and Western Railroad System was first known as Ligetts Gap Railroad, taking its name from a gap about two miles before Scranton. Its route lay from Scranton to the Susquehanna River at Great Bend, Susquehanna County (near Binghamton, New York), fifty-three and one-half miles, there connecting with the then New York and Erie Railroad.

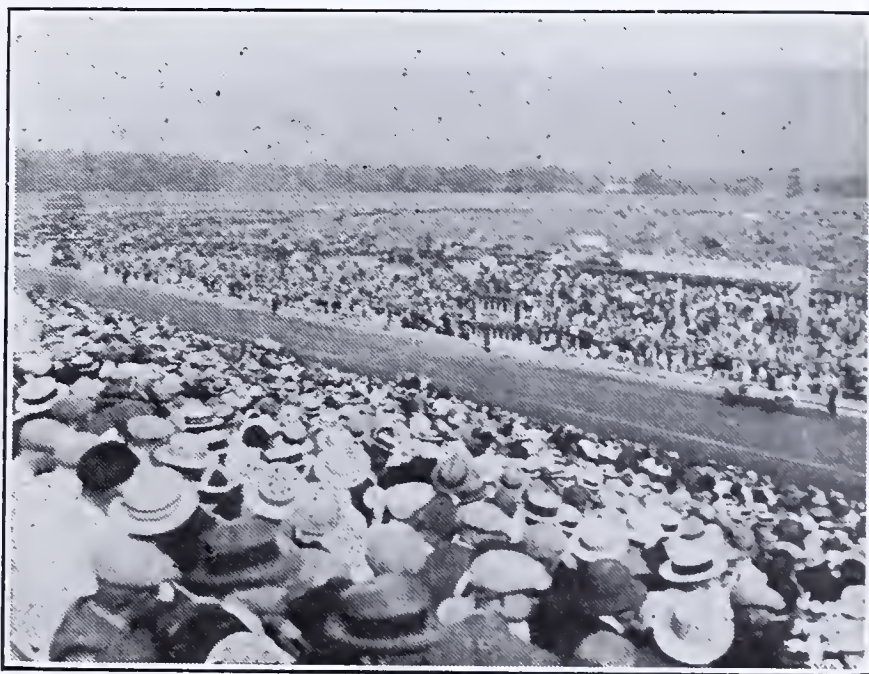
The charter was obtained March 14, 1849. By a supplement, approved April 14, 1851, the corporate name of the railroad became the Lackawanna and Western Railroad Company. The first train ran on Tuesday, October 14, 1851, and the road was opened for regular traffic on Monday following.

By a purchase of the charter of the Delaware and Cobb's Gap Company, which later was incorporated April 7, 1849, but which never began the work of construction, the Lackawanna and Western Railroad Company became the Delaware, Lackawanna and Western Railroad Company, and the act of the General Assembly for this consolidation was approved March 11, 1853. The present system comprises 2,678.35 miles of line. It extends from the seaboard at New York to the Great Lakes at Buffalo, through New Jersey, Pennsylvania, Southern and Western New York, with branches into the slate and cement regions, and the anthracite coal fields of Pennsylvania, and the agricultural, dairy and industrial area of Central New York.

The Delaware, Lackawanna and Western Railroad Company assumed control of the Bangor and Portland Railroad August 1, 1900, by the purchase of its stock. This was the last of the branches located in Pennsylvania secured by the corporation.

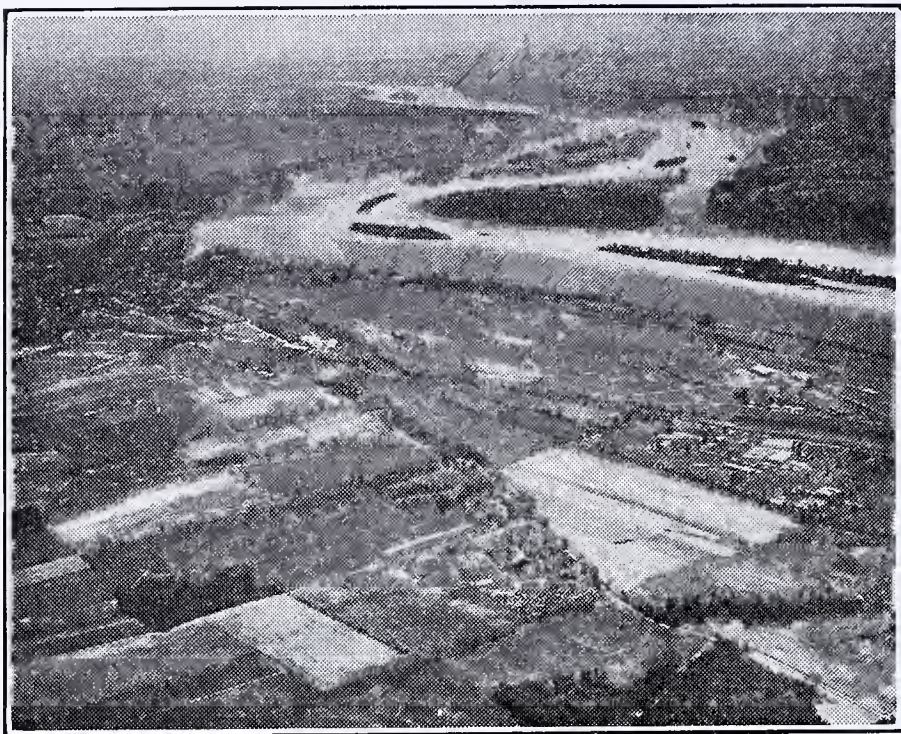
The extensive anthracite coal lands of this company were in Luzerne and Lackawanna counties, but under the decision of the United States Supreme Court the railroad discontinued its coal business in 1909, when this was taken over by the Delaware, Lackawanna and Western Coal Company. On July 21, 1921, the company sold its coal properties to the Glen Alden Coal Company.

Motor Vehicles—Motor vehicles have given the railroads and steamship lines their most serious competition, and with the road building program of this and other Commonwealths, this competition is greatly stimulated. The passenger cars, taxis and busses, and the motor trucks of freight car proportions present a problem which is a long way from being solved. Nowhere are these rapidly moving motor vehicles more numerous than on the excellent hard-surfaced highways of Pennsylvania.



Auto Race Track, Altoona

Aeronautics—Aeronautics received early attention in Pennsylvania and the contribution of her inhabitants has been important. George Pletz, of Hummelstown, lost his life in 1828 in a trial flight with a flying machine of his invention.

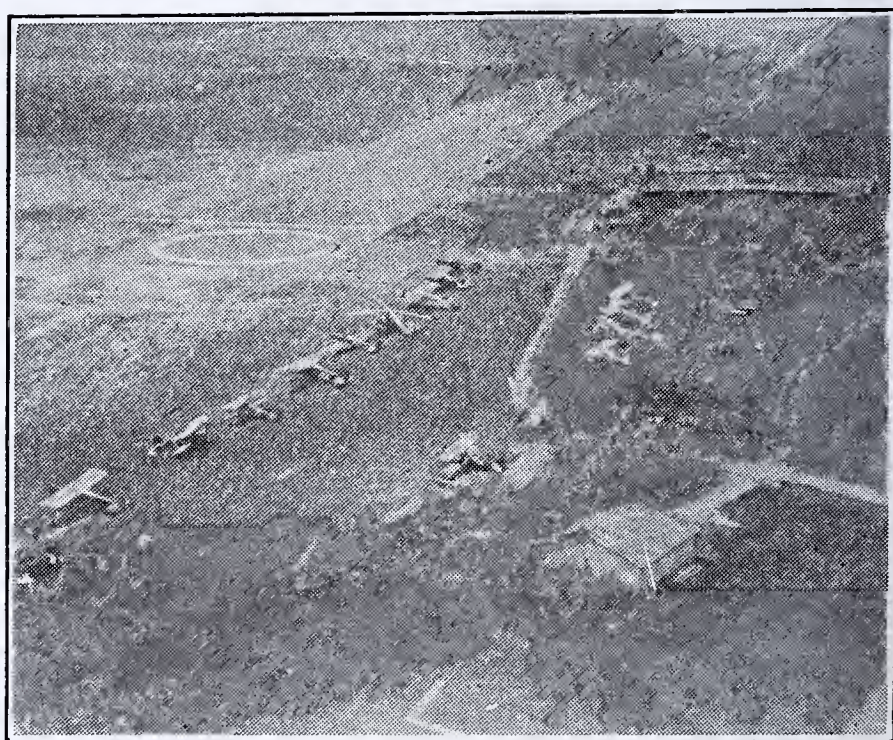


U. S. Airport, Middletown

ing about 500 miles, the balloon encountered a storm, and the voyage came to an abrupt end near Caanan, Connecticut. After this attempt Donaldson attempted a balloon ascension at Chicago, accompanied by a reporter named Grimwood. After they had passed out of sight, neither of them was ever heard from again. It is supposed they ran into a storm and perished in Lake Michigan. Donaldson's exploits constantly kept him in the public eye. On one occasion he made an ascent at Reading in a balloon constructed of ordinary wrapping paper. He sailed away in the presence of 20,000 persons, and landed safely in a ravine about twenty miles distant.

Samuel Pierpont Langley, while director of Allegheny Observatory (1867-87) became internationally known through his experiments in connection with the problem of mechanical flight. A sum of \$5,000 was voted him by Congress for carrying out of his ideas, which were not wholly successful. He was, however, the pioneer who cut the air trail. He made the first man-carrying airplane; the Wrights made the first that carried a man.

The first attempt to reach Europe by a flight across the Atlantic Ocean was made in a balloon, in 1873, by Washington H. Donaldson, of Reading, Pennsylvania, the most daring aeronaut of his time. The "New York Daily Graphic" raised \$100,000 to finance the project. Donaldson started from New York City, October 6, 1873, his companions being Alfred Ford, of the "Daily Graphic," and a man named Lunte. After travel-



Harrisburg Airport

Mrs. Louise McP. Thaden, of Pittsburgh, was winner of the cross country derby for women, leading all of the 2,350 miles from Santa Monica, California, to Cleveland Airport. She also climbed more than 25,000 feet, and made a record of twenty-two hours in the air. Major J. Sydney Owens, the youngest ace in the American Flying Corps, who shot down five German planes officially and two unofficially, also was the winner of many racing events after the war. Marshall



Airplane Beacon at Clearfield

Earl Reid, of Philadelphia, a native of Milton, was one of the first successful aviators, the first to fly from New York to Philadelphia; he was an instructor during the World War.

All-metal seaplane, PN-9, was built in Philadelphia, and the "Shenandoah," the first great dirigible, was also built at League Island Navy Yard.

Pennsylvania's improved highways serve as guide posts to the aerial traveler, which the Commonwealth has taken forward steps to stimulate and regulate. The State Aeronautic Commission was created by act of Assembly, and Governor John S. Fisher, on June 1, 1929, appointed its members.

CHAPTER V.

PENNSYLVANIA IN INDUSTRY.

Pennsylvania, the Keystone of the original thirteen, is now no less the Keystone of the forty-eight sovereign States. It has frequently been referred to as the "Industrial Titan of America."

More than a dozen of the sovereign nations of the earth before the World War were smaller in area, and more than half of the rulers of the world governed fewer people than live within the confines of our Commonwealth. A traveler gains the impression that Pennsylvania is peopled with foreign-born, yet it outranks every other State in the Union in the number of sons and daughters of native parentage, even New York has a million fewer people whose parents were born under the Stars and Stripes.

Pennsylvania's preëminence among the States of the Union is founded principally on the value of its industrial production, and of all the industries manufacturing easily takes first place, and is therefore the controlling factor. The manufacturing industry of Pennsylvania is an epic of human energy. The population is only one-twelfth of that of the United States, yet it succeeds in producing one-eighth of the Nation's manufactures and more than one-fourth of its minerals, second only to New York, and about as much as any country in the world outside of the United States. It embraces only a thousandth part of the earth's land surface and only one-half of one per cent. of the earth's population, but it produces one-sixth of the world's pig iron and the same proportion of its coal. Pennsylvania leads all the other States in the diversity of her industries, forging the heaviest castings, rolling the largest plates and the heaviest armor, building the largest engines, making the most delicate micrometers, and watches, whose balance wheels measure time down to the hundred thousandth part of a second, and chronometers that do even ten times better than the watches.

Ever famous for the heavy manufactures and no less for its light ones, Pennsylvania has always demanded the most powerful forges in the world and required the most delicate turning machines, producing raw iron, costing less than a cent a pound, and finished steel, worth in some cases hundreds of dollars an ounce. Pennsylvania commands admiration for her manufacturing industries, and compels attention for her position in the commercial world.

Pennsylvania produces one-fifth of all electric machinery; one-sixth of the pig iron, coal and sugar refining of the world; one-half of America's production of cork products, oil cloth, linoleum, cotton, lace and felt hats; one-third of America's glass, silk, carpets, rugs, knit goods, railroad cars, and confectionery. It is the leading leather center, the second largest woolen and silk center in the Union, and the

largest carpet making center in all the world. Lehigh County alone produces nearly half the cement made in the United States.

Sixty-seven cities in Pennsylvania, with a population of more than 10,000 each, turn out sixty-five per cent. of the State's total annual production in excess of \$7,000,000,000. Forty-five per cent. of all goods manufactured in Pennsylvania are shipped to other parts of the world.

Agriculture—Although coal, iron, oil, cement, and manufacturing are leading interests, yet it is a fact that agriculture remains as the greatest productive industry in Pennsylvania. Much of the finest farming land in the world is to be seen here, and in not a few of the staple crops Pennsylvania exceeds all other States in production per acre; its dairy and truck farms are not excelled elsewhere.

The mountains have a profound industrial influence. Like a wall they enclose to the southeast a quarter circle, embracing fourteen counties, which is at once Pennsylvania's most fruitful garden and most productive workshop. Two-thirds of the area of this section is in cultivated farms. In comparison with the Commonwealth as a whole this section has only a sixth the total area, but includes more than a quarter of the improved agricultural acreage; and the value of its farm and dairy products is more than three-eighths of the total. Yet it is not solely an agricultural section; it is preëminent as an industrial region. In it are Philadelphia and seven other cities that take high rank as industrial centers.

West of the mountains and forming roughly the segment of another circle with the western boundary as its chord is an area which is second only to the southeastern section in the production of its farms. The thirteen counties included in this section make up one-fifth of the total area and include more than a quarter of the improved farm land. Fifty-five per cent. of this area is in cultivated farms and the value of their agricultural production is twenty-one per cent. of the total. Pittsburgh, the second city in population and the center of the great steel industry, is in this section, and its industrial production is exceeded only by that of Philadelphia. Excluding Allegheny County, this western area does not rank as high as an industrial section.

The northern area, including fifteen counties, embraces twenty-eight per cent. of the total area, but its farms include only sixteen per cent. of the improved agricultural land, and its farm and dairy products account for only fourteen per cent. of the total. There remains the central area, that large section of more than one-third of the total area, including twenty-five counties. The slopes of the mountains are heavily forested and these forests constitute half of the total area. In the valleys are fertile farm lands, which make up one-third of the farm area of the Commonwealth, and produce commodities valued at more than a quarter of the State's total agricultural production. But this section owes its greatest importance to its mines and its quarries.

There are less persons engaged in agriculture in Pennsylvania than in mining. In 1920 fewer than ten per cent. of all persons engaged in gainful occupations were

found in agricultural and dairying pursuits. The agricultural industry of the Commonwealth is secure in its future.

Amid Pennsylvania's scenic beauty lie 200,420 farm homes, representing a total farm population of approximately 850,000 and a land area of 16,298,000 acres. No State has finer farm homes to reflect a permanent agricultural system. No State has a more diversified type of farming, including soil-building crop rotations and extensive livestock production.



Rural Scene

In 1925 the State produced crops valued at \$304,852,000 on an estimated area of 7,712,000 crop acres, at the same time maintaining livestock valued at \$144,688,000.

Pennsylvania had the distinction of producing a corn crop in 1925 averaging fifty-one bushels per acre, the highest average yield per acre since the Civil War and the second highest average yield of any State. The yield of winter wheat was twenty bushels per acre, which places the State among the first ten in yield per acre of this crop.

In 1920 about three-fifths of the area of Pennsylvania was included in farms and only two-thirds of its farm land was improved. The number of farms increased from 127,577 in 1850 to 224,248 in 1900, then declined to 200,443 in 1925, and the census of 1930 reported 172,419 farms of all types. The total acreage is 15,309,485, valued at \$1,203,017,645. The total value of the farm products sold, traded, or used by the operator's family, was \$323,551,741. The 172,419 farms are classified as follows: 50,959 as general; 3,057 cash grain; 7,975 crop-specialty; 2,182 fruit;

2,206 truck; 45,380 dairy; 3,103 animal-specialty; 30 stock-ranch; 11,982 poultry; 16,073 self-sufficing; 23,287 abnormal; and 6,185 as unclassified.

Farming is of the general and livestock type. In most of the counties all the rough and most of the concentrated food for stock is produced on the farm. Tame hay is the chief crop, about two-fifths of the crop acreage being devoted to it. The southeastern section is excellent for growing cereals, and nearly one-half the crop acreage produces Indian corn, wheat, oats, buckwheat, rye, barley, and other grains.



Erie Grapes

The farm land is so situated as to permit the cultivation of a great variety of crops. The elevation ranges from practically sea level to 3,000 feet and the crop growing season from 80 to 207 days. This range makes possible the general cultivation of fruits, vegetables, cereals, and grasses. However, these crops are grown quite generally in other sections, especially in Erie County. Hay is produced in all sections, but especially in the dairy district. Tobacco is raised in the southeastern part of the State, particu-

larly in Lancaster County. More than eighty-five per cent. of the Nation's mushroom supply is produced in counties just west of Philadelphia. The dairy industry has reached its highest development in the southeastern, northeastern and northwestern sections. Sheep are raised to a larger extent in the southwestern counties than in any other district. In short, the counties of Pennsylvania which lead in certain products are: Adams in apple production; Berks in raising oats, barley and pears; Bradford in buckwheat, hay and honey, in number of beehives and in number of silos; Bucks in truck crops, especially asparagus; Chester in greenhouse products, including mushrooms and in number of farm radios; Erie in

production of grapes, cherries, plums and small fruits; Franklin in rye; Fulton in growing clover seed; Greene in sheep; Lancaster in corn, wheat, tobacco and milk production, in number of horses and dairy cattle, in use of commercial fertilizer, in number of farm automobiles, motor trucks and tractors, and in number of farms having telephones and electricity; Lehigh in potatoes; Montgomery in nursery products; Perry in producing timothy seed; Somerset in maple products; Tioga in celery; Westmoreland in amount of lime used on farms; and York in production of peaches, farm made butter, eggs and strawberries, and in number of mules, swine and chickens on farms.

Among all the States, Pennsylvania ranks first in the production of buckwheat, first in cigar leaf tobacco, tenth in apples, third in potatoes, seventh in all tobacco, wheat and rye, sixth in hay, fifth in grapes, ninth in winter wheat and twelfth in corn and oats. A higher acre yield of wheat is secured on the average in Pennsylvania than is secured in Kansas, and the acre yield of corn is greater on the average than in Iowa.

The important crops in order of their value are: hay, corn, potatoes, winter wheat, oats, apples, tobacco, and buckwheat. Other crops include rye, barley, alfalfa, peaches, pears, grapes, mushrooms, cabbage, asparagus, celery, lettuce, onions, strawberries, tomatoes, beans and peas. The only important farm and orchard products grown in the United States not adapted to Pennsylvania are: cotton, rice, flaxseed, sorghums and citrus fruits.

Pennsylvania is one of the great dairy States, ranking third in the total value of dairy products and fifth in milk production. Over 1,250,000 head of cattle—of which 850,000 are dairy cows—are kept, and more than two-thirds of these have



Potatoes

been tested and are known to be free of tuberculosis. These cows produce annually milk valued at more than \$100,000,000. Poultry is found on practically every farm. The flocks produce eggs worth annually more than \$40,000,000. Livestock might well be termed the backbone of Pennsylvania agriculture. More than four of every five farms have cattle, three of every four have swine and nine of every ten have poultry.

Viewed from the geographic standpoint the farm lands permit the cultivation of a great variety of crops. Aside from the farm crops, grown throughout the State, several sections have become well known for specialized crops. Corn and wheat are important crops in the southeastern sections of the State, oats in the northern section, potatoes in the east central and north central sections, grapes in the Lake Erie district, and apples in the south central section, of which Adams County is the center. Pears, once grown in considerable quantities, have declined greatly.

Dairy farming predominates in the northern tier of counties where the shorter growing season and glaciated soil favor pastures and the raising of hay. In 1930 the total value of dairy products (\$127,743,850) was exceeded by but few States.



Rural Scene

There were 430,921 cows and heifers kept mainly for milk; other cattle, 365,260; total cows milked, 808,090, producing 479,930,541 gallons of milk, or an average production of 667 gallons per dairy cow and 496 gallons for other cows.

Livestock farming predominates in the southern and western sections. The total number of sheep being 469,914, about half the entire number were found to be in Washington and Greene Counties in the southwestern corner. There were 176,636

The poultry business is more important than any other livestock branch except dairying. There were raised in 1930 15,446,514 chickens, and in the same year

119,624,063 dozens of eggs; Pennsylvania is strategically situated for marketing agricultural products.

The markets for the vast production of farm crops, livestock and livestock products abound on every hand in Pennsylvania. The State has 150 cities of 5,000 to 25,000 population, or almost twice as many as any other State. These centers, in addition to the larger cities and the numerous roadside markets, give farmers unexcelled, dependable markets. Pennsylvania-grown products have gained a wide reputation for quality, freshness and sanitary production.

Coupled with accessible markets and a diversified type of agriculture, Pennsylvania farm land has a conservative valuation, thus eliminating problems of overvaluation common in certain other agricultural areas. Sufficient capital is likewise available for financing farming operations. The one handicap is the shortage of labor and this is being met on every hand by the adoption of more efficient methods. Labor-saving machinery can be found on every farm. More productive varieties of crops, such as Pennsylvania 44, Forward and Red Rock wheat have been introduced, and purebred livestock is now generally owned in all sections of the State.

As evidence of their progressiveness, Pennsylvania farmers in 1925 were equalled only by the farmers of Illinois in the production of ton litters of swine, which means the breeding and feeding of one litter to a weight of a ton or more in six months. Likewise, thirty-nine farmers produced 400 or more bushels of potatoes on a measured acre in 1925, thirty-three in 1924, and fifty-three in 1923. The highest yield in 1925 was 571.4 bushels. The average yield of potatoes in the State in 1925 was 123 as compared to an average of 104 bushels for the United States. Records from cow testing association work in 1925 indicate that eighteen herds averaged over 400 pounds of butter fat, seventy-three herds from 350 to 400 pounds, and 208 herds from 300 to 350 pounds. The average production of butter fat per cow in the United States is about 150 pounds.

The richness of Pennsylvania's agriculture is reflected in the high standard of living of her farmers. More than 160,000 farms, or about eighty per cent., have automobiles; over 86,700, or forty-three per cent., have gas engines, and 20,000, or ten per cent., have electric light and power. While the use of home conveniences is not so extensive, rapid progress has been made during the past few years. The latest figures show that over 29,000 farm homes have running water, 22,889 have bath rooms, and 39,538 have heating systems. Over 10,000 farmers had radios, according to a census made a year ago. This number has probably increased to 15,000 at the present time.

With the advancement in rural electrification, the wide diversification and increasing efficiency of crop and livestock production, the continued building of soil fertility, and the ever present desire to build and make better farm homes, Pennsylvania is rapidly enriching her agricultural resources.

Commerce—The chief articles of the first commerce of Pennsylvania were furs and skins, which the Indians eagerly brought in exchange for trinkets and tools. Soon, however, the food supplies of the Province found a ready market in

England. Salted beef, smoked ham and bacon made up cargoes in company with Pennsylvania wheat and flour. Thus the early colonists were able to pay for English glass, cutlery, silverware, lace, ribbons, fine clothing, furniture, and such machinery as they required. Our grain was sold in many of the European seaports outside of England. Ships from the Delaware River competed with those of Boston and New York. "But after all," wrote Peter Kalm, the Swedish traveler, "Philadelphia reaps the greatest profits from its trade to the West Indies, for thither the inhabitants ship almost every day a quantity of flour, butter, flesh, and other victuals, timber and plank." In return for these goods, the Philadelphia merchants brought back molasses, sugar, and rum, or the coveted Spanish dollars. The commerce of Pennsylvania was great. Hundreds of vessels visited the Delaware each year and imports doubled in a decade.

Mineral Wealth—Pennsylvania is the greatest mineral industrial Commonwealth in the world. Its importance as a mineral territory is clearly shown when we stop to consider that her mines and products derived from minerals account for about two-thirds of the entire productive wealth of the Commonwealth, and that Pennsylvania alone annually produces about one-fifth of the total value of the Nation's mineral wealth and ranks first in the following mineral products and commodities manufactured from minerals: anthracite and bituminous coal, coke, cement clay, ferro alloys, pig iron, mineral paints, sand and gravel, slate, natural gas value, blast furnace products, steel work and rolling mills products, smelting and refining of zinc, glass, fire brick, mineral and earth, foundry supplies, enamel and sanitary ware, steel springs, structural iron work, wrought iron pipe, boiler plates, armor plates, and railroad repair work.

Only Oklahoma, Texas, and California lead Pennsylvania in petroleum, and Minnesota, Michigan, and Alabama in iron ore taken out of the ground. Pennsylvania has a natural monopoly on anthracite, and leads in bituminous coal. Pennsylvania is without production only in sulphur, gypsum, and lead.

A symposium of Pennsylvania, such as this collection of records, serves to impress on the eye and mind the stability that underlies this great Commonwealth and its great industries. It impressed Henry Adams, of Massachusetts, who wrote of Pennsylvania: "It set up the government in 1789; saved it in 1861; created the American System; developed its iron and coal powers; and invented its great railways. The Pennsylvanian in practical matters was the steadiest of all American types, perhaps the most efficient, certainly the safest, strongest American in America, and as an ally worth all the rest." The late Senator Hoar eloquently referred to Pennsylvania as a State "which perhaps more perfectly than any other community on earth represents every interest and employment of civilized man, the farm, the factory, the mine, the railroad, commerce, manufacture and agriculture; which reaches out one hand to the commerce of the Mississippi Valley and the Gulf, and with the other, like Venice, espouses the everlasting sea."

Useful Minerals—Pennsylvania leads all other States in the quantity and variety of useful minerals. Allanite is found in Chester, Lawrence, Lehigh, and Philadelphia counties; Amethysts are found in Bedford, Chester, Delaware, Huntingdon, and Philadelphia counties, some stones being suitable for gems; Apatite is found in Chester, Delaware, and Philadelphia counties; Asbestos is found near Media, Delaware County, and in Adams, Franklin, and Northampton counties; Azurite in Berks, Chester, Lebanon, and Montgomery counties; Barite in Bucks, Chester, Franklin, Fulton, and Montgomery counties; Beryl in Philadelphia, and fine crystals have been quarried in Union Township, Chester County, and in Delaware County many fine specimens have been obtained; Bornite in Montgomery and Philadelphia counties; Bromine in Allegheny County; Brucite in Berks and Lancaster counties; Cadmium (Greenockite) in Lehigh; Caronite near Mauch Chunk; Cerusite (lead carbonate) in Bradford, Chester, Lancaster, and Montgomery counties; Chalcocite in Chester, Lancaster, Montgomery, and Philadelphia; Chalcopyrite (copper pyrites) in Berks, Chester, Delaware, Lancaster, Lebanon, Montgomery and Philadelphia counties; Chromite in Chester, Delaware and Lancaster counties; Copper (native) in Adams, Cumberland, Berks, Chester, Franklin, Lebanon, Lehigh, and Montgomery counties; Copper minerals in Delaware; Corundum in Bucks, Chester, Delaware, Lancaster, Lehigh, Montgomery counties; Cuprite in Adams, Franklin, Lebanon, Montgomery, and Northampton counties; Cyanite in Delaware; Dolomite in Montgomery, where it was used in making magnesium carbonate; Feldspar (albite) in Chester; Feldspar (orthoclase, microcline) in Chester and Delaware; Fluorspar in Chester, Columbia, Franklin, Lebanon, Lehigh, Northampton, Monroe, Montgomery, and Philadelphia counties; Galena in Blair, Bucks, Chester, Lancaster and Schuylkill counties; Garnet in Adams, Delaware, Chester, and Philadelphia counties, fine large specimens in gem crystals occur in the pegmatites at Avondale and Leiperville, Delaware County; Gold in Bucks, Chester, Montgomery and Philadelphia counties, and traces in Snyder and other counties; Graphite in Berks, Chester, and Lehigh counties; Greenockite in Lehigh; Lead in Blair, Bradford, Chester, Lancaster, and Montgomery counties; Magnesium in Berks, Lancaster, and Montgomery counties; Magnetite in Adams, Berks, Bucks, Chester, Dauphin, Lebanon, Lehigh and York counties; it has been mined at Durham, Bucks County, for more than a hundred years; Malachite in Adams, Berks, Bradford, Chester, Lebanon, Lehigh, Montgomery, and Perry counties; Manganese ore in Berks, Blair, Centre, Cumberland, Dauphin, Huntingdon, Northampton, and Lehigh counties; Melaconite in Bradford, Chester, and Montgomery counties; Mica in Lehigh; Millerite in Lancaster; Millstones in Lancaster; Mineral Paint in Berks, Cambria, Carbon, Lawrence, Lehigh, Luzerne, Northampton, Northumberland counties; Molybdenite in Bucks, Delaware, Lehigh, and Philadelphia counties; Moonstone in Chester and Delaware; Nickel in Lancaster; Ochre in Berks, Cambria, Carbon, Lawrence, Lehigh, Luzerne, and Northampton counties; Pentlandite in Lancaster; Psilomelane, the

most abundant manganese mineral in the Commonwealth, occurs in old ore banks of Lehigh-Northampton-Berks District; Pyrite in Chester, Lancaster, Lebanon, Lehigh, Luzerne, Mercer, and York counties; Pyrolusite in Montgomery and Lehigh; Pyrrhotite in Berks and Lancaster; Quartz in Adams, Chester, Franklin, and Monroe counties; Radium in Carbon County; Rutile in Chester, which formerly supplied the entire United States demand, also in Delaware, Lancaster, and Philadelphia counties; Sand (fire) in Chester County; Sheelite in Adams, Franklin, and Philadelphia counties; Schist in Montgomery; Serpentine in Berks, Chester, Lancaster, Delaware, Northampton, Lebanon, and York counties; Siderite in Carbon, Bedford, Clearfield, Cambria, Fayette, Fulton, Huntingdon, Mifflin, Somerset, Lackawanna, and Lycoming counties; Sienna in Berks; Talc in Chester, Montgomery, and Northampton; Titanium in Chester, Delaware, Lancaster, and Philadelphia counties; Tungsten minerals in Adams, Franklin and Philadelphia; Umber in Berks, Bucks and Northampton; Vanadium in Chester; Vermiculite in Chester; Vesuvianite in Bucks; Wad in Berks, Lehigh, Northampton and other counties with limonite; Wavellite in Chester, Cumberland, Lehigh and Northampton; Whetstone in Lehigh; Williamsite in Lancaster; Wulfenite in Chester, Lancaster and Montgomery; Yttrium in Chester, Lawrence, Lehigh and Philadelphia counties.

IRON.

Iron is the most important of all metals. Indeed, it is certain that with the present practices of the world we could better spare all the other metals than iron. Next to coal, iron is clearly the most important of the sub-surface products.

In the Colonial period the British Government systematically discouraged all efforts of the Colonists to produce iron, in order to avoid competition with home industries. There were forges and bloomeries in nearly all the colonies from the times of the earliest settlement, and as unlimited supplies of fuel were always at hand in the vast forests it was only necessary to locate and obtain persons who could construct forges. The iron required for structural purposes, such as bars, straps, nails, hinges, sheets, wagon tires, tools, etc., was hammered out of blooms from the forge, or shaped with rolls propelled by waterpower. In fact, before the invention of the puddling process by Cort, in England, in 1784, a large proportion of all forms of wrought iron were derived in this manner. The introduction of the puddling process was second in importance to no other invention in the history of the iron industry of America.

Iron and steel are inextricably woven into the history of Pennsylvania and into the fabric of its social and industrial institutions. From the earliest days of the Province to the present time its fortunes have been closely bound up with the metal industries which have contributed so much to the prosperity and comfort of its people.

Iron at first was a scarce commodity. A hundred pounds of iron were worth a good cow, and all the iron had to be imported from England. This condition was changed with the discovery of iron ore in many places.

Iron has been said to be the soul of manufacture, the mainspring of civilized society. From time immemorial, whenever a new country has been about to be settled, there has been included in its charter rights some mention of the mineral wealth which might be disclosed. The "Conditions or Concessions" which accompanied William Penn's "Frame of Government," in the sixth clause, reads: "That notwithstanding there be no mention made in the several Deeds made to the purchasers, yet the said William Penn does accord and declare, that all Rivers, Rivulets, Woods and Underwoods, Waters, Watercourses, Quarries, Mines, and Minerals (except Mines Royal) shall be freely and finally enjoyed and wholly, by the purchasers into whose lot they fall."

However far-reaching their outlook, William Penn and his associates little dreamed of the vast store of wealth and energy locked up in the coal and iron mines of his beloved Pennsylvania. Traces of gold were found in Pennsylvania in the time of the Swedish settlements on the Delaware, and silver, copper, iron, lead, zinc, nickel, and several kinds of precious stones were afterwards discovered. It is certain that the earliest Swede settlers were informed of the existence of iron ore in eastern Pennsylvania, but on account of their meagre resources they made no effort to mine ore or manufacture it in any form. This same thing may be said also of the early Dutch and English settlers on the Delaware River.

Even before the arrival of William Penn there was some slight activity in the extreme northeastern corner of Bucks County, where some white settlers were seated as early as 1681. James Claypool wrote, June 4, 1682: "We are to send one hundred men to Durham to build houses, to plant and improve land, and to set up a glass house for bottles and drinking glasses, and we hope to have wine and oil for our merchandise, and hemp for cordage, and iron and lead and other minerals."

William Penn wrote to Lord Keeper North, July, 1683, of the existence of "mineral of iron and copper in various places," and having owned iron furnaces in Hawkhurst in England, he very naturally desired to encourage the manufacture of iron in his own province in America. Although there is no record of the Proprietor's connection with any furnace or forge in Pennsylvania there are to be found a few references to a mining venture of which he had great hope.

Gabriel Thomas, a resident of the Province, writing in 1698, stated that ironstone ore had lately been found which far exceeded that in England, being richer and less crossy, and that some preparations had been made to carry on an ironwork. In 1702, James Logan wrote to Penn as follows: "I have spoke to the chief of those concerned in iron mines, but they seem careless, never having had a meeting since thy departure. Their answer is that they have not yet found any considerable vein."

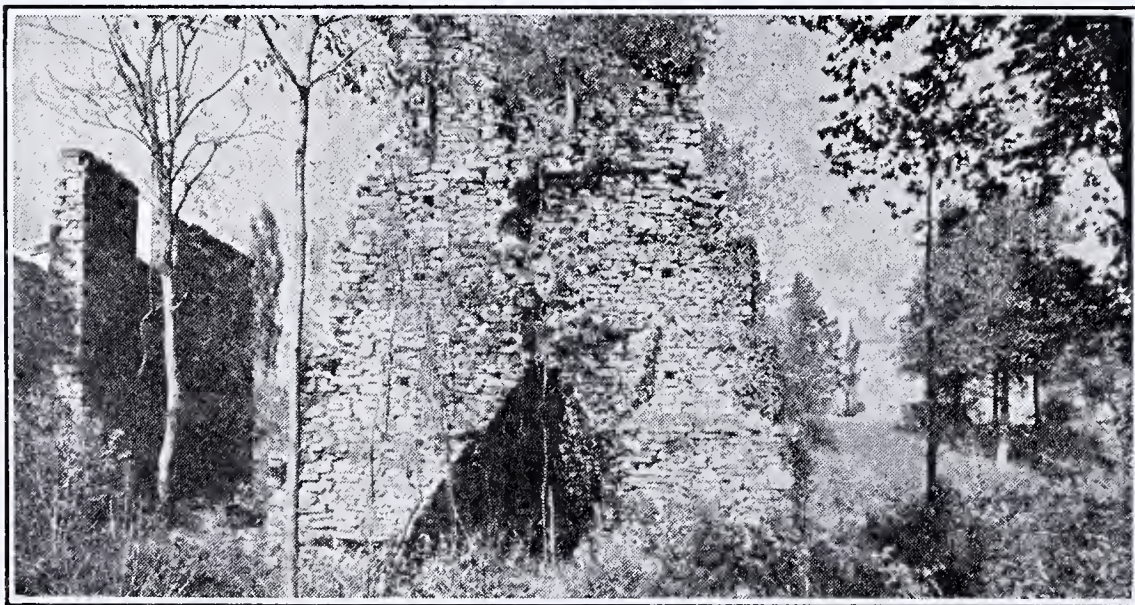
Rumors reached Penn in 1708, only four years before his final breakdown from paralysis, that the King of the Shawnee Indians was quietly working iron mines for Mitchell, a "Swiss acquainted with mining," and others, including Governor Evans. He made an effort, through his secretary, James Logan, to learn the location of the

mine and more definite facts concerning the operation, but it seems that Mitchell was only a fake promoter, and the Governor's story was fiction. If these persons were ever engaged in promoting mines they may possibly have been the copper mines on Mine Ridge, a few miles south of Lancaster, where, in 1843, the remains of an ancient shaft were still visible. They were supposed, however, to have been opened by French adventurers from Maryland, about the time of Penn's arrival in his Province.

Earliest Iron Works—The first successful attempt to establish iron works in Pennsylvania was that of Thomas Rutter, an English Quaker, who, about 1716, built a bloomery forge called "Pool Forge," on Manatawney Creek, near present Pottstown. The original patent of William Penn to Thomas Rutter of 300 acres in Manatawney, issued in 1714-15, is still in possession of descendants.

This first iron furnace is described by Jonathan Dickinson, in a letter written in 1717: "This last summer one Thomas Rutter, a smith, who lives not far from Germantown, hath removed further up in the country, and of his own strength hath set upon making iron. Such it proves to be, as is highly set by all smiths here, who say that the best of Swedes iron doth not exceed it; and we have accounts of others that are going on with the iron-works. It is supposed there is stone (ore) sufficient for ages to come. The first projectors may open the way, and in all likelihood hemp and iron may be improved and transported home in time, if not discouraged. Certainly a few years may supply this place for its domestic services, as may be easily supposed."

Some unfriendly Indians attacked Pool Forge, which was farther up the stream than the original one built by Rutter, in May, 1728, but were repulsed with small



Ruins of an Old Pennsylvania Furnace

loss by the workmen. This attack caused a treaty to be made at which Sassoonan, the King of the Delaware, promised his friend, Thomas Rutter, to clear the path between his forge and Philadelphia. Besides Pool Forge, Thomas Rutter, with Anthony Morris, Alexander Woodrop, Samuel

Preston, William Attwood, John Leacock, Nathaniel French, George Mifflin, Thomas Potts, George Boone, and his own son, Thomas Rutter, Jr., erected the first furnace in Pennsylvania at Colebrookdale, in present Berks County. The

Rutter and Potts families continued in the iron industry during a period of 140 years. The list of forges and furnaces on the Manatawney and its branches, owned by members of these two families, before the Revolutionary War, included Mount Pleasant Furnace and Forge, on Perkiomen Creek, thirteen miles from Pottstown; Little Pine Forge and McCall's Forge in present Montgomery County; Spring Forge, on Pine Creek; Colebrookdale Furnace and Forge, Amity Forge, Rutter's Forge, Pool Forge and Pine Forge, in Berks County. Thomas Rutter, the first ironmaster in Pennsylvania, died at his home in Philadelphia, Sunday, March 13, 1729.

On the death of Rutter, Thomas Potts came to the front as the leading manufacturer of iron, and on the death of the latter, in 1752, he was succeeded by his son, John, who gave the industry its greatest impulse. He founded Pottstown, and his family were the leading ironmasters of their time. They secured Warwick Furnace, built in 1737, where cannon were made for the Continental Army, and Valley Forge, and extended their business affairs to the Susquehanna, to Lancaster, to Philadelphia, and to England. Anthony Morris, one of those interested in the erection of Durham Furnace in Bucks County in 1727, was one of their early partners, and William Bird, who in 1740 began making iron where Birdsboro now stands, was trained by them.

Samuel Nutt, an English Quaker, from Warwickshire, built a forge called Coventry on French Creek, in the northern part of Chester County, which was blown in about 1718. Former Governor Pennypacker says that the mine of ore was discovered and pointed out to Nutt by an Indian Chief. As a reward he gave the daughter of the chief an iron pot which cost four shillings and six pence. Mordecai Lincoln, ancestor of the President, for a time was one-third owner of this forge. Johnathan Dickinson, in July, 1718, wrote that the "expectations from the iron works forty miles Schuylkill are very great." In April, 1719, he again wrote: "Our iron promises well. What hath been sent over to England hath been greatly approved. Our smiths work up all they make, and it is as good as the best Swedish iron." Coventry Forge is noted on William Scull's map of Pennsylvania in 1770. It was making blooms from pig iron until 1870. The foundations of the old forge may still be seen.

Negro slaves, redemptioners, indentured servants, and a number of Indians were employed by both Colebrookdale and Coventry. Iron was hauled in wagons to Philadelphia over rough country roads, one ton at a load. The capacity of Colebrookdale Furnace was about two hundred tons a year, and it is not probable that any of the early furnaces much exceeded it.

The next iron enterprise in Pennsylvania was Colebrookdale Furnace, now Boyertown, in Berks County, built about 1720. Plenty of cinder now marks the exact site. A forge was also built at Manatawney, then Philadelphia, but now Montgomery County. Nutt also erected Reading Furnace, about this same date, on French Creek, in Chester County. Iron works are believed to have been established on Octorara Creek in Lancaster County as early as 1726 by one Kurtz.

Durham Iron Works—The iron ore in Durham Township, Bucks County, drew the attention of the settlers and in 1726 a company was formed to erect a blast furnace, manufacture pig iron, cast pots and pans, and make firebacks. The furnace was located in the village of Durham, and was probably the second erected in Pennsylvania. Among the fourteen original owners, James Logan is said to have owned one-fourth part. Jeremiah Langhorne, Anthony Morris, William Allen, Joseph Turner, Robert Ellis, George Fitzwater, Clement Plumstead, John Hopkins, Andrew Bradford, Thomas Lindley, Griffith Owen, Samuel Powell and Charles Read were the other owners.

The keystone of Durham Furnace, in possession of B. F. Fackenthal, Riegelsville, bears date 1727. The furnace was built of stone, forty feet square and thirty feet high. The large leather bellows used to increase the blast was operated by a waterwheel turned by Durham Creek. The charcoal was made in pits, close at hand, and the limestone was quarried on the property. The labor was provided



Durham Furnace, 1876, Bucks County

by the Negro farm hands. When the iron was ready to be tapped, a horn was blown and the slaves presented themselves. The capacity of the furnace was two tons of iron daily, and the operation so successful that it soon came to be regarded as the best iron works in the country.

On November 6, 1727, James Logan shipped three tons of pig iron made at Durham to England. This iron excited so much jealousy that two years later a bill was introduced into Parliament to prevent the erection of rolling and slitting mills here, which was then rejected, but in 1749 such an act was finally passed.

The ownership of Durham Furnace changed hands several times, and not a few of the most prominent citizens of America were interested in it. George Taylor, a signer of the Declaration of Independence, leased and operated the furnace five years, during which period he manufactured shot and shell for the Continental Army. He procured his lease from Joseph Galloway, who allied himself with the British, and whose property was seized and sold by the Commissioner of Forfeited Estates, when the Durham Furnace passed into the possession of Richard Backhouse.

In 1781 the output was valued at £1,982, which included shot and shell, which were shipped to Philadelphia in Durham boats, and sometimes overland by a route known only to the patriots. While the British were in possession of Philadelphia, a squad of Continental soldiers were captured near Bristol, the shells confiscated, and the prisoners turned over to General Howe.

Durham Furnace remained in active operation, with occasional periods of suspension during the hard times of the war and after, until 1794, when it finally "blew out." In 1829 the old furnace was demolished to make room for a grist-mill. Just before the Civil War two new furnaces were built, using anthracite coal, and these in turn made way for a large new furnace in 1874.

At Warwick stoves and stove plates covered with ornamentation and Biblical inscriptions were extensively made. The Warwick books of accounts show many sales to Franklin, but nowhere give them his name. In his autobiography Franklin says: "I made a present of the model to Mr. Robert Grace, one of my early friends, who, having an iron furnace, found the casting of the plates for these stoves a profitable thing, as they were growing in demand." The management of Warwick Furnace had fallen in Grace's hands in 1740, he had recently married the widow of Samuel Nutt, Jr. This lady was the granddaughter of Thomas Rutter. Such stove plates were also made at Durham and at Elizabeth, a furnace built in Lancaster County about 1750, by Baron William Stiegel.

Cornwall Iron Mines—In the early part of its industrial history Pennsylvania owed much of the activity of its iron trade to its possession of the wonderful Cornwall iron ore deposits, and in its later history it owes the preëminence of its iron and steel industries largely to the nearness of Lake Superior ores and to the rich deposits of Connellsville coking coal.

The Cornwall ore hills, which comprise three mountains of magnetic iron ore in Lebanon County, are the most remarkable in the world. This tract was deeded by the Proprietaries to Joseph Turner, of Philadelphia, May 8, 1732, who sold the entire tract to William Allen on April 5, 1734, and in November, 1737, he assigned the tract to Peter Grubb. Grubb built Cornwall Furnace in 1742. At his death, in 1754, the property descended to his sons, Curtis and Peter, both colonels in the Continental Army. In 1785, Robert Coleman purchased the interest of Peter Grubb, Jr., and through successive purchases he acquired ownership of the entire

tract. For more than a quarter of a century Robert Coleman was the most prominent ironmaster of Pennsylvania. His descendants and those of Peter Grubb are still identified with the manufacture of iron, and the Cornwall ore mines which were first opened in 1740 are still relied upon to furnish large quantities of iron ore for furnaces in Pennsylvania. Prior to the development of the Lake Superior iron ore region the Cornwall mines were annually the most productive group of all the iron mines in America, and this distinction they held for several years after Lake Superior ores came into general use. Down to this hour Cornwall Mines have produced more iron ore than any other single iron ore property in the United States, not excepting the most productive of the Lake Superior Mines.

In 1743 William Bronson, of Philadelphia, erected two forges on Conestoga Creek, near Churchtown, Lancaster County, which he called Windsor, and which were famous forges in their day.

Charming Forge was built on Tulpehocken Creek, in Berks County, in 1749. It was owned by George Ege during the Revolutionary War period and he purchased from Congress the services of thirty-four Hessian prisoners for the purpose of cutting a channel through a bed of rock to supply waterpower to a slitting mill. This industry was opened until 1887, when the forge was abandoned.

By the year 1759 most of the iron works in Pennsylvania lay within a radius of forty miles from Philadelphia, and they all exported iron from that city except Peter Grubb, who sent his iron down the Susquehanna, whence it went to England with iron from Maryland and Virginia. About this time Pennsylvania produced nearly 470 tons of bar iron yearly.

England Discouraged Iron Industries—In accordance with an act of Parliament, in 1749, discouraging the manufacture of wrought iron and steel in America, Governor Hamilton issued a proclamation, which suppressed the forges and mills as common nuisances. This proclamation was dated August 16, 1750. The act of 1749 directed every Governor in the British Colonies to transmit to the Commissioners for Trade and Plantations a certificate containing a particular account of every mill, engine for slitting and rolling iron, every plating forge to work with a tilt hammer, and every furnace for making steel erected in his colony. These certificates were to contain the names of the proprietors and the place where the mill, engine, forge or furnace was erected, and the number of each. Governor Hamilton ordered that each of the above-mentioned proprietors should appear before him in the city of Philadelphia, on or before September 21, with the proper proof of ownership, and that none operate his mill, engine, forge or furnace on or after June 24.

Joseph Hart, high sheriff of Bucks County, testified that there were "no mills or engines or plating-forge or steel-furnace in Bucks County, on the 24th June last." A similar report was made by Andrew Work, sheriff of Lancaster County. John Owen, sheriff of Chester County, reported that there was "no plating-forge

nor steel-furnace, and only one mill for slitting and rolling iron belonging to John Taylor, in Thornbury Township, built in 1746, in use 24th June, 1750." Richard Sewell, sheriff of Philadelphia County, reported "William Bronson in city of Philadelphia, furnace for making steel, 24th June, 1750; Stephen Paschall, in city of Philadelphia, furnace for making steel; John Hall, in county of Philadelphia, plating-forge, with tilt hammer, in township Byberry, not in use during past twelve months." Stephen Paschall also swore, "Furnace for making steel, built in 1747, at north-west corner Walnut and Eighth Streets, in good working order on 24th June, 1750; wood, coal, iron, converting ingredients, etc., being on hand. Property absolutely in me." It will thus be noted that there were only one slitting and rolling mill, one plating forge and two steel works in the Province of Pennsylvania in September, 1750.

Peter Kalm, a Swedish naturalist, visited Pennsylvania in 1748 and wrote, in November of that year, that "so much iron was made in the colony that not only the inhabitants had plenty, but foreign ships were also stocked, and it was exported to the West Indies. The iron was considered better for shipbuilding than Swedish iron, because it did not rust so soon."

The amount of iron exported from Philadelphia for the year 1766 was 882 tons of bar iron and 813 tons of pig iron.

Iron Making in Revolutionary War—During the War for Independence the development of the iron manufacture had progressed far enough to manufacture cannon, swords, and guns. A blacksmith of Cumberland County made some curious wrought iron cannon. One of them fell into the possession of the British at the battle of Brandywine, and was sent to London, and is still preserved in the Tower as a monument of his ingenuity and patriotism. It was made of four layers of wrought iron staves firmly bound together, hooped like a barrel, with bands of the same material. Cannon were cast at a number of places during the Revolution; especially at Reading and Warwick furnaces, and small arms were made at Philadelphia, Lancaster, Easton, Carlisle, Lebanon, Hummelstown, White Deer Mills and other places.

By the year 1789 there were fourteen furnaces, which produced 6,150 tons of pig iron, and thirty-four forges in Pennsylvania, which produced annually 1,800 tons of bars and 1,000 tons of castings. There were more than ten thousand persons employed in making iron in Pennsylvania. In 1794 Pennsylvania led all other States in the production of pig iron and bar iron. Tench Coxe, writing that year, said "the iron works of the last seven years are equal to one-half of all those which have been erected in the State during and before the year 1787."

In 1838 there were in existence within a radius of fifty-two miles of Lancaster 102 furnaces, forges, and rolling mills.

Central Pennsylvania—The first blast furnace in the Juniata Valley was Bedford Furnace, built near present Orbisonia, Huntingdon County, in 1787. Next

one was Centre Furnace, erected on Spring Creek, Centre County, in 1791, by Colonel John Patton and Colonel Samuel Miles, both officers of the Continental Army. Rock Forge was built nearby, in 1793. There were eight furnaces, ten forges, and one rolling and slitting mill in Huntingdon County in 1832, and quite as many in Centre County. In 1850 there were in these two counties and in Blair and Mifflin counties forty-eight furnaces, forty-two forges, and eight rolling mills. Much of the iron made was sold in Pittsburgh. Before the completion of the Pennsylvania Canal and Portage Railroad the iron from Centre County was carried on the backs of horses to the Clarion and then floated down stream on arks to Pittsburgh. The iron from Huntingdon County was hauled over the Frankstown Road to Johnstown and floated to Pittsburgh *via* the Conemaugh River.

Western Pennsylvania—The first iron made west of the Allegheny Mountains was manufactured by John Hayden in 1790, in a smith's fire in Fayette County. The first furnace was built on Jacob's Creek, that county, and blown in November 1, 1790, by William Turnbull and Peter Marnie, of Philadelphia, who soon added a forge, the whole being called the Alliance Iron Works. Six-pound shot for Fort Pitt were made here in 1792. Another furnace was built at Dunbar in 1791, and a larger one two years later. The latter had a forge, called Union, which became famous in its day. Other furnaces in Fayette County included Fairchance Furnace, built in 1804, which was kept in operation until 1887. John and Andrew Oliphant, at the Fairfield Furnace, cast shot which was used by General Jackson in the battle of New Orleans, January 8, 1815.

The first iron furnace in Pittsburgh was built at Shady Side in 1792, but it was soon abandoned and pig iron was not again made in Pittsburgh until 1859.

The first rolling and slitting mills and nail factory west of the Allegheny Mountains were also in Fayette County. In 1811 there were ten furnaces, one air furnace, eight forges, three rolling and slitting mills, one steel furnace, and five trip hammers in the county. For many years Pittsburgh and the Ohio and Mississippi valleys were largely supplied by it with all kinds of castings and hammered bar iron.

Westmoreland soon followed Fayette County in this important industry. Westmoreland furnace was built in 1794, and produced stoves and castings. General Arthur St. Clair built Hermitage Furnace, near Ligonier, in 1803, and made stoves and castings. These and other Westmoreland furnaces shipped pig iron and castings by boats to Pittsburgh, and down the Ohio as far as New Orleans.

Shade Furnace, in Somerset County, was built in 1807, the first in the county. In 1820 a forge was added. Other furnaces were established and the products shipped to Pittsburgh or hauled overland to Johnstown.

John Holiday built Cambria Forge at Johnstown about 1809. A nail factory was built here in 1810 by Robert Pierson. Cambria has ever since been noted as an iron and steel center. The extensive works of the Cambria Steel Company, now part of the Bethlehem Steel Company, were commenced in 1853.

A furnace erected in Armstrong County in 1818, known as Bear Creek, was owned by Henry Baldwin in 1832, when Gordon says it was reputed to be the largest furnace in the United States, having made forty tons of iron in a week.

The first iron foundry at Pittsburgh was established in 1805 by Joseph McClurg, Joseph Smith, and John Gormly. It was called the Pittsburgh Foundry. During the War of 1812 it supplied the government with cannon, howitzers, shells, and balls for both Commodore Perry's fleet on Lake Erie and General Jackson's army at New Orleans.



Lower Works, Bethlehem Steel Co., Johnstown

Other foundries, nail factories, and rolling mills were soon established, and a rolling mill was built in 1812.

Hematite, or fossil iron ore, is found in the Clinton formation from Bloomsburg, and Danville, traceable through Northumberland, Union, Snyder, Centre, Mifflin, Juniata, Perry and Huntingdon counties, and thence through Fulton and Bedford into Maryland; and in Berks, Bradford, Lycoming, and Tioga counties. The specular iron ore is found in Adams, Bucks, Chester, Franklin, Lebanon, and York counties. Brown iron ore, or limonite, is extensively developed in the Great Valley from Delaware River to the Maryland line. Many scattered ore banks have been worked out in Berks, Cumberland, Dauphin, Franklin, and Lebanon counties. It occurs in Chester and Montgomery counties, and in Bedford, Huntingdon, Mifflin, and Lancaster counties, and through Middle Pennsylvania, and in Armstrong, Beaver, Butler, Clarion, Clearfield, Indiana, Jefferson, and Lawrence counties in Western Pennsylvania.

Rolling Mills—A rolling mill at Pittsburgh was built in 1811 or 1812 by Christopher Cowan, a Scotch-Irishman, and called the Pittsburgh Rolling Mill. It had no puddling furnaces, but its products were sheet iron, nail and spike rods, shovels, chains, hatchets, hammers, etc. The first mill erected in the United States to puddle iron and roll iron bars was built by Isaac Meason in 1816 and 1817 at Plumstock, on Redstone Creek, Fayette County, Pennsylvania.

Isaac Pennock built the Brandywine Rolling Mill at Coatesville about 1810, which was purchased by Dr. Charles Lukens in 1816. The first boiler plates made in the United States were rolled at this mill by Dr. Lukens prior to his death, which occurred in 1825, and the largest plates in the world are rolled here today.

By 1825 there were not less than five rolling mills in operation. In 1836 there were nine rolling mills, eighteen foundries, engine factories, and machine shops.

The first blast furnace was built in 1859. In the following year crucible steel was manufactured, and in 1875 Andrew Carnegie completed the first Bessemer steel works in Allegheny County, soon followed by open-hearth steel furnaces.

It was early seen that its excellent facilities for water transportation made Pittsburgh a national center for the rising iron trade. The Monongahela and Allegheny river brought ores and fuel to the young city, while the Ohio carried the products of her mills and foundries to the growing West. The settlers in the Mississippi Valley depended on Pittsburgh for nails, locks, and hinges for their homes, pots and pans, axes, spades, hoes, etc. Even the sugar planters of Louisiana bought their sugar kettles from the busy city at the "Forks of the Ohio." By the gradual change from charcoal to bituminous coal for use in blast furnaces the Pittsburgh region, with its almost inexhaustible supplies of that fuel, was destined to become the great iron and steel center of the world. The preëminence of Pennsylvania as an iron and steel producing State is largely due to the extraordinary activity of these industries of Allegheny County.

No statistics of the production of iron were collected before the year 1810. The production of pig iron and cast iron in that year was 53,908 tons; wrought and malleable, 27,105 tons; having a total value of \$6,081,374, of which amount Pennsylvania produced \$2,473,748. The total tonnage of steel was 917 tons, valued at \$144,736, of which Pennsylvania contained five steel furnaces, which produced 531 tons, valued at \$81,147.

The period between the years 1840 and 1850 was the most eventful one in the history of the American iron industry. The introduction of the improvements in smelting, together with the use of steam power for propelling the blast, and in



Lukens Steel Company, Coatesville, Where Largest Plates in World are Rolled

performing other varieties of work about the furnaces, its replacement of waterpower in operating rolling mills and hammers, in mining coal and ore, and the rapid growth of railroads, produced a stimulating effect probably never before experienced in a similar degree by any industry.

In 1867 John Player, of England, personally superintended the erection of the first of his iron hot-blast stoves in the United States at the furnace of J. B. Moorehead and Company, at West Conshohocken, Pennsylvania.

It is estimated that Pennsylvania contains only about one-seventeenth of the original supply of iron ore in the United States, but up to the close of the last

century it mined about one-half of the iron ore and produced about one-half of the total output of pig iron in the Nation. Pennsylvania has not been a large producer of iron ore since the ores of the Lake Superior region came into general use in the manufacture of Bessemer pig iron, and it has fallen to about one and one-half per cent. of the whole production of the United States, yet she still produces more than one-third of the total output of pig iron in the United States.

There were 459 blast furnaces in the United States in 1920, and thirty-six per cent. of them were in Pennsylvania, producing thirty-eight per cent. of the total production of the Nation's pig iron. The peak production was reached in 1917, when more than 165,000,000 tons were made in Pennsylvania.

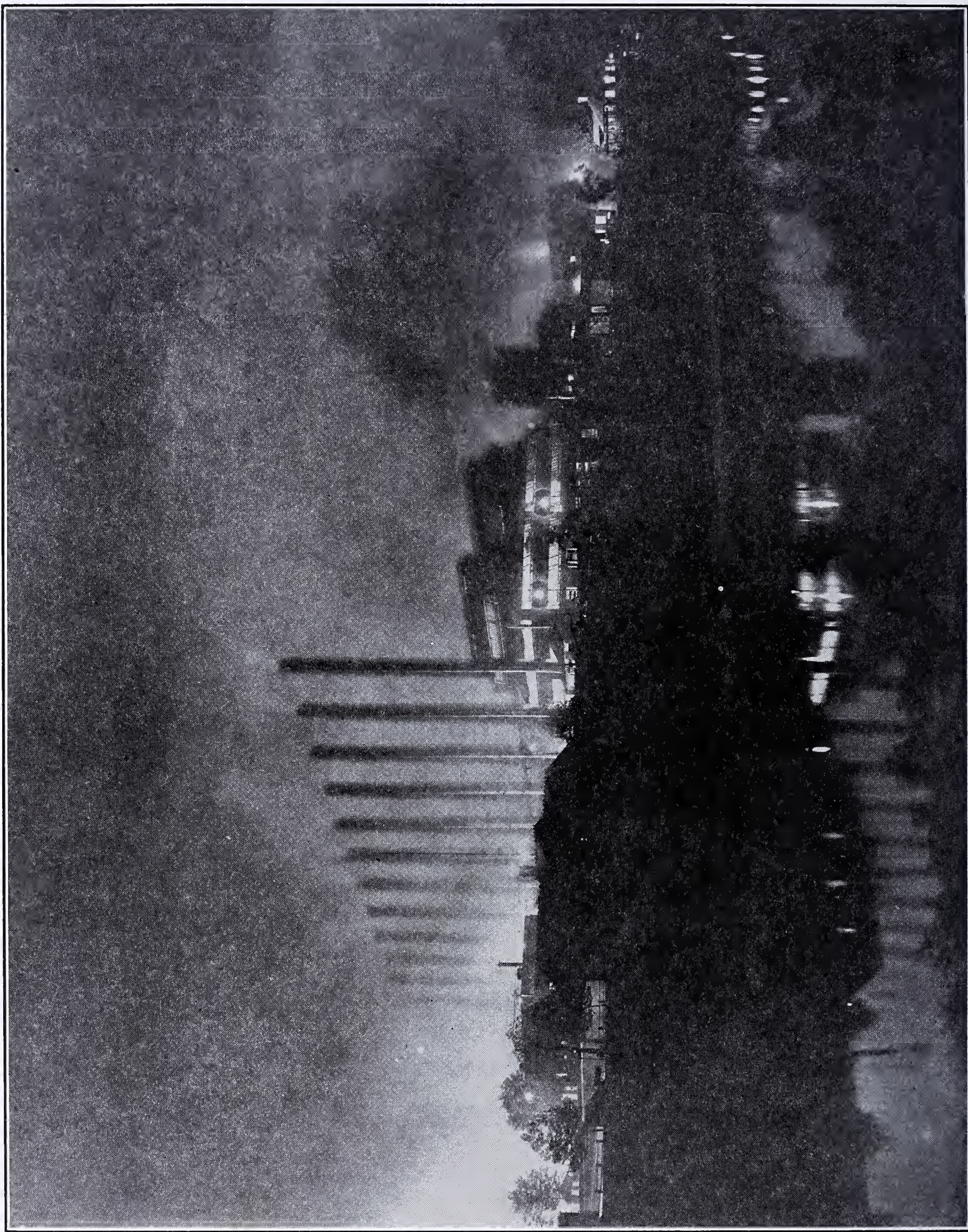
STEEL.

The transition from the age of iron to the age of steel came about the year 1875, and just as Pennsylvania was the seat of the iron industry, so it became also the headquarters for steel.

The first steel made in America was produced at Coventry in 1732. It is said by Mrs. James, in her "Memorial of Thomas Potts, Jr.," that Samuel Nutt built the first steel works in the Province of French Creek in 1734, and that probably William Bronson was associated with him. They were known as the Vincent Steel Works. Acrelius tells us, in 1750, that at William Bronson's iron works on the French Creek "there is a steel furnace." He describes the process and says, "it serves as the best steel to put upon edge tools." At that time axes and hatchets were made of wrought iron, but edges of steel were welded upon them. Cemented steel was made at Caledonia, near Bedford, before the close of the eighteenth century, by William McDermott, a native of Scotland, whose daughter, Josephine, married David Rittenhouse Porter, afterwards Governor of Pennsylvania two terms, who was also engaged in the iron industry. But the manufacture of steel by the old-time method of cementation never attained a position of much magnitude in this country, while the manufacture of crucible steel made but slow process down to about 1860. Up to this time English manufacturers furnished the greater part of our tool steel.

When Lewis and Clark set out on their expedition to the unknown West, they bought their rifles from the famous Lancaster gunsmiths. Many a Kentucky pioneer owed life and his living to the good work of those Lancaster mechanics. Other early gun makers were William Henry and Frederick Hummel. To Dr. Curtis G. Hussey, of Pittsburgh, belongs the credit of establishing this industry in the United States as a regular product in 1860.

Bessemer steel was first produced at Troy, New York, in 1867, by a company largely composed of Pennsylvanians, but the first practical production of Bessemer steel in America was begun in May, 1867, by the Pennsylvania Steel Company at its Steelton Plant.



Steel Mills at Night, Pittsburgh

Armor Plate—In the train of dire disaster wrought by the War of the Rebellion some good to the iron industry may be found; for not only did iron ships make their appearance in the navy, but the use of iron plates had its inception. As early as 1859 a French frigate was protected with iron plates five inches in thickness, and in 1861 an English frigate had solid iron plates of slightly less thickness. As regards armor either of these vessels was much better protected by six to eight thicknesses of one-inch iron plates bolted one on the other.

The first contract for American made armor plate for the United States Navy was given to the Bethlehem Iron Company June 1, 1887. John Fritz, in 1891, built a hammer of 125 tons capacity, but armor plate is no longer rolled or forged by hammers, but manufactured with huge hydraulic presses, some with an energy of 15,000 tons. The second concern to make armor plate was Carnegie, Phipps and Company, who received their first order November 20, 1890. There are at this time several plants in Pennsylvania which are capable of producing armor plates for the Navy Department. The armor plate industry in America, both in magnitude and in the character of its products, embodies the highest achievement of American metallurgical skill, and we owe it all to the enterprise and skill of Pennsylvanians.

Rails—On April 24, 1844, Hon. Edward Joy Morris, member of Congress from Pennsylvania, declared that “not a single ton of T rail has yet been made in this country.” The manufacture of heavy iron rails began about this time. The Montour Rolling Mill, at Danville, Pennsylvania, was built in 1845, expressly to roll T rails. By the year 1849 there were 21,712 gross tons of iron rails produced in this country, and the peak year of production, 1872, there were 808,866 tons rolled. The first iron rails of thirty-foot length were rolled by Cambria Iron Company, Johnstown, July 27, 1854.

The first steel rails produced in the United States in commercial quantities were rolled by the Cambria Iron Company, at Johnstown, in August, 1867, from ingots made at the works of the Pennsylvania Steel Company. At the Centennial Exhibition at Philadelphia, in 1876, the Edgar Thomson Steel Company exhibited a steel rail which at that time was the longest steel rail that had ever been rolled. It was 120 feet long and weighed sixty-two pounds to the yard.

Open-hearth Steel—Open-hearth steel was first produced in Pennsylvania at Pittsburgh in 1871. John Fritz introduced the manufacture of Bessemer steel and Bessemer steel rails at Johnstown in 1873. The Pennsylvania Steel Company made the first basic Bessemer steel in America on May 24, 1884. The Homestead Steel Works produced the first basic open-hearth steel March 30, 1888, which was a regular commercial product.

Steel making will long continue to be one of Pennsylvania's basic industries. It is more important that its manufacture is not restricted to any particular section, but is distributed over the entire Commonwealth, in Pittsburgh, Homestead,

McKeesport, Clairton, Aliquippa, Woodlawn, Monaca, Beaver Falls, Sharon, New Castle, Johnstown, Steelton, Coatesville and Bethlehem. Pennsylvania produces more steel than is made in all of Great Britain.

William A. Irvin, native of Indiana, Pennsylvania, is president of the United States Steel Corporation.

COAL.

The origin of coal is now clearly understood from its geological distribution and its constituents. The old hypothesis, now long since abandoned, was that it was a mere bituminous compound deposited like strata of other character. Free bitumen does not exist in nature, and hence deposits of it in the rocks would be an anomaly if we could not positively indicate its origin. It is proven by ocular examination that it is composed of woody matter or vegetable remains, identical with the materials that go to the formation of peat in different parts of the world. It has been written by an acknowledged authority, says Howard M. Jenkins, in his excellent "Pennsylvania, Colonial and Federal," that "not a single case has been recorded in regard to the formation of coal which cannot find its counterpart and explanation in some of the phenomena attending the present formation of peat."

Pennsylvania has long been noted as the leader of all States in the mining of coal and manufacture of coke. Besides having practically all the anthracite coal, Pennsylvania has the thickest bituminous coal measures, and most of the coal obtained from these is of the best quality. The first knowledge of anthracite in America dates back to about 1750 or 1755, when an Indian brought a supply of it to a gunsmith at Nazareth for repairing his rifle, the smith's supply of charcoal having become exhausted.

Stone coal was used by the garrison at Fort Augusta, mention of which fact is made by Colonel William Plunket, who was one of the original soldiers sent to build this important provincial fortress. The records in the British War Office also contain references to its use there. A certain Ensign Holler, of the fort's garrison, wrote that in the winter of 1758 the house was heated by stone coal brought down the river from near Nanticoke and that a wagonload had been brought from a place six leagues from Fort Augusta, which point must have been at or near either the present Shamokin or Mount Carmel.

Anthracite was known to the Indians of the Wyoming Valley long before the white man penetrated that fertile region. Samples of the "stone coal" were sent to the Penns in England as early as 1765. In 1766 a company of Nanticoke and Mohican Indians visited Philadelphia and reported to the Governor that there were mines in Wyoming. A survey of Wyoming in 1768 notes "stone coal" near the mouth of Toby's Creek. One of General Sullivan's officers in 1779 records the presence of "vast mines of coal, pewter, lead and coppers." Obadiah Gore used coal in his blacksmith forge as early as 1769. He also used it in nailing in 1788.

In 1776 James Tilghman wrote to the Penns, in England, that "A bed of anthracite coal had been found in the Wyoming Valley, and it may some day or other be of great value." He was cautious, but nevertheless a prophet.

With the knowledge of this use of anthracite in the Wyoming Valley some of this fuel was shipped down the Susquehanna River to Carlisle during the Revolutionary War. It was used in the arsenal and proved to be of value. On November 25, 1780, the Congress "Resolved, That all the artificers in the department of military stores in Pennsylvania be removed to Carlisle and that in the future only an issuing store and an elaboratory fixing ammunition be kept in Philadelphia." Immediately thereafter Colonel Blaine was directed to prepare stores, etc., for the troops, and during the month of December of 1780 nearly all the artificers were sent to Carlisle. There is no doubt that coal from Wyoming was there used in the casting of cannon, as it could have been more readily brought down the Susquehanna in bateaux than hauled from the seaports for that purpose. It is also well known that provisions were taken up the Susquehanna, and as coal was then known and probably mined, the bateaux in returning evidently conveyed the fuel to Kelso's Ferry, opposite Harrisburg. The barracks erected by the Hessian soldiers captured by General Washington at the battle of Trenton, and sent to Carlisle as prisoners of war, later became one of the historic buildings of Pennsylvania. The building was one long used by the Carlisle Indian School and is still on the government reservation there.

Pittsburgh, too, had used fuel dug from a high bluff before the town. Coal was known to have existed near the present city of Pottsville as early as 1790, when Nicho Allen is said to have discovered some of the black stones and tested their burning qualities.

The Conestoga wagons might have transported the products of the farm to market for many years more had not Philip Ginter, the hunter, in 1791, discovered "stone coals" under the roots of a fallen tree nine miles west of Mauch Chunk. About the same time that Ginter made his discovery coal was discovered by Isaac Tomlinson near what is now Shamokin. He had recently removed on a farm between there and Mount Carmel and found the coals lying in the bed of Quaker Run, a stream running through his farm and so-called because he was a member of the Society of Friends. Thus we see that the three discoverers of anthracite were Allen, Ginter and Tomlinson, and what is more remarkable, all these discoveries were made about the same time, and yet it is a fact that coal was mined at Wyoming nearly a quarter century before these "discoveries."

The coal trade had been active in Wyoming Valley as early as 1807, when the Smiths shipped a boat load to Columbia. George H. Hollenback shipped two loads down the river in 1813, and sent coal by wagon to Philadelphia. Lord Butler and Crandall Wilcox both shipped coal in 1814.

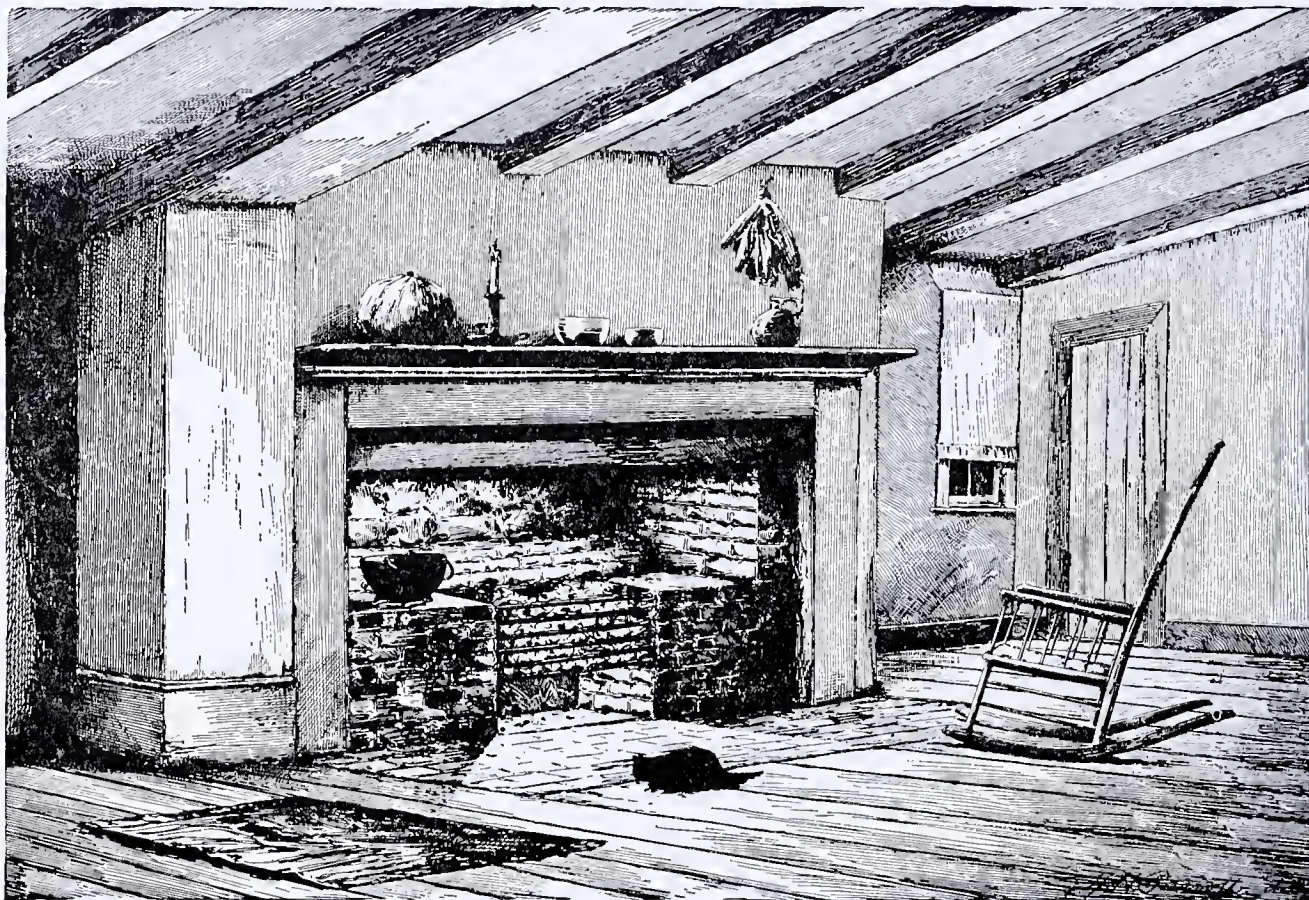
Judge Fell Burns Coal—The use of anthracite for domestic purposes seems to have been discovered by Judge Jesse Fell, of Wilkes-Barre. The following memorandum was made at the time on the fly-leaf of one of his books:

"February 11, 1808, made the experiment of burning the common stone coal of the valley in a grate, in a common fireplace in my house, and found it will answer

the purpose of fuel, making a clearer and better fire, at less expense, than burning wood in the common way. Jesse Fell."

News of this successful experiment soon spread through the town and country, and people flocked to witness the discovery. Similar grates were soon constructed by Judge Fell's neighbors, and in a short time were in general use throughout the valley.

In the spring of that year, John and Abijah Smith loaded two arks with coal at Ransom's Creek, in Plymouth, and took it down the river to Columbia; but on



Old Fell Tavern Room and Grate

offering it for sale, no person could be induced to purchase. They were compelled to leave the black stones behind them unsold when they returned to their homes.

The next year the Smiths, not in the least discouraged, took two arks of coal and a grate and again proceeded to Columbia. The grate was put up and the coals were burned in it, thus proving the practicability of using coal as a fuel. The result was a sale of the coal, and thus began the initiative of the immense coal trade of Pennsylvania.

First Coal Company—Philip Ginter, the hunter, did not exactly "discover anthracite." He knew all about the existence of coal at Wyoming and something of its use. But this is the date from which the great business of that valley originated, though it was twenty-nine years before the coal trade really began.

Ginter made known his discovery to Colonel Jacob Weiss, residing at what is now Weissport, who took a sample in his saddlebags to Philadelphia, which resulted in the organization of the Lehigh Coal Mine Company, February 13, 1782, the first company for the mining of "stone coals" in the Lehigh region. The organizers were:

Colonel Weiss, Michael Hillegas, and Charles Cist, of Philadelphia, and Judge William Henry, of Northampton County, and others. They purchased of Colonel Weiss a tract of land at Summit Hill, and later added more until they owned about 10,000 acres, the greater part containing coal deposits.

The coal was mined by the company, but after fruitless endeavors to market it at a remunerative price, *via* the Lehigh River, the stockholders became tired of paying assessments and suffered the enterprise to be idle for some years. Attempts had also been made to introduce it locally by land carriage, but only with partial success, because of the ignorance and prejudice against its use.

In 1798 some of it was purchased by the Gun Works, at Nazareth, but the smith tried for four days to make it burn, when he threw the balance of the coal into the street. In 1806 William Turnbull constructed an "ark," in which he conveyed a large quantity to Philadelphia. In 1808 a shipment was made to Oliver Evans, of Mars Iron Works.

To endeavor to render their property available, the company granted individual leases, but these proved unprofitable and were given up. Towards the close of the year 1813 a lease on their land for ten years was made to Messrs. Miner, Cist and Robinson, but they also abandoned mining. Finally the property came into the possession of the Lehigh Coal Company, later the Lehigh Coal and Navigation Company, incorporated February 13, 1822. This corporation was empowered to commence a slack water navigation upon the Lehigh, and in the same year operations were under way on the canal; a railroad was constructed, nine miles in length, from the mines at Summit Hill to Mauch Chunk, on the wagon road laid out in 1819. The elevation at Summit Hill was 936 feet and the cars of coal descended by gravity. Mules rode down with the coal and brought the empty cars back to the mine, the trip taking three hours to complete. In 1845 a back track was constructed and used for returning the cars, and is now known as the famous "Switch-back Railroad."

During 1822, 2,240 tons of coal were shipped to Philadelphia. The tonnage was increased constantly until 1855, when 1,275,000 tons were shipped, and the traffic had then reached its highest point.

In 1812 Colonel George Shoemaker and Nicho Allen, at Pottsville raised several wagonloads of coal, but could find no purchasers. Allen sold out to Shoemaker, who carried ten wagonloads to Philadelphia. So great was the prejudice still felt against it, although a practical chemist had become convinced it was combustible, that Shoemaker was denounced as a vile impostor, and, to escape



An Early Miner

arrest, he drove thirty miles out of his way, to avoid the officers of the law. But, fortunately, among the purchasers was a firm of iron manufacturers of Delaware County, who announced a successful experiment through the newspapers, and from that time it grew in favor, and the intelligent portion of the community foresaw its future value.

Local history in the anthracite region abounds in interesting reminiscences of the early attempts to burn hard coal, and many tales are related which indicate that those who then advocated its use as a fuel substitute for wood, and offered it for sale as such, were regarded as impostors and frauds.

Leads in Coal Production—Pennsylvania has always led all other States in the production of coal, both anthracite and bituminous. In 1830 it mined 99.3



Locust Summit Colliery at Night, Near Ashland

per cent. of all the coal in the United States, and as late as 1920 it mined 6,690,000,000 tons, while the rest of the forty-seven States mined 6,672,000,000 tons. The volume of coal removed from the mines of Pennsylvania equals in volume the amount of soil removed to make the Panama Canal. In the five years between 1918-1923 the value of the coal

mined in Pennsylvania was almost exactly as much in value as all the gold and silver mined in the United States and Alaska from the time of their discovery.

The high cost of manufacturing charcoal, and its enormous consumption in the furnace per ton of iron produced, were serious obstacles to the growth of the industry, even where a good supply of ore was well assured. As early as 1835 the adoption of anthracite coal to the manufacture of iron began to attract attention.

On October 19, 1839, the Pioneer Furnace, at Pottsville, was successfully blown in with anthracite coal and ran for about three months. This was the first use of anthracite in the blast furnace in this country that was attended with a fair degree of success. On July 4, 1840, David Thomas made the first cast of foundry iron at the Lehigh Crane Iron Company, at Catasauqua, Pennsylvania, when he successfully produced fifty tons with anthracite coal, the first completely successful anthracite furnace in the world. By 1855 more pig iron was produced with anthracite coal than that made with charcoal.

Mining, for many years the most important industry, has decreased in importance in recent years, both in respect to the number of persons engaged and in the value of its products. Only about ten per cent. of the persons now engaged in productive industry in Pennsylvania are occupied in mining and quarrying operations.

This should not be taken to mean, however, that mining is no longer a most important industry, but rather that its once supreme position among the industries of the Commonwealth has been taken by the manufacturing industries. There are in Pennsylvania more than 2,700 mines.

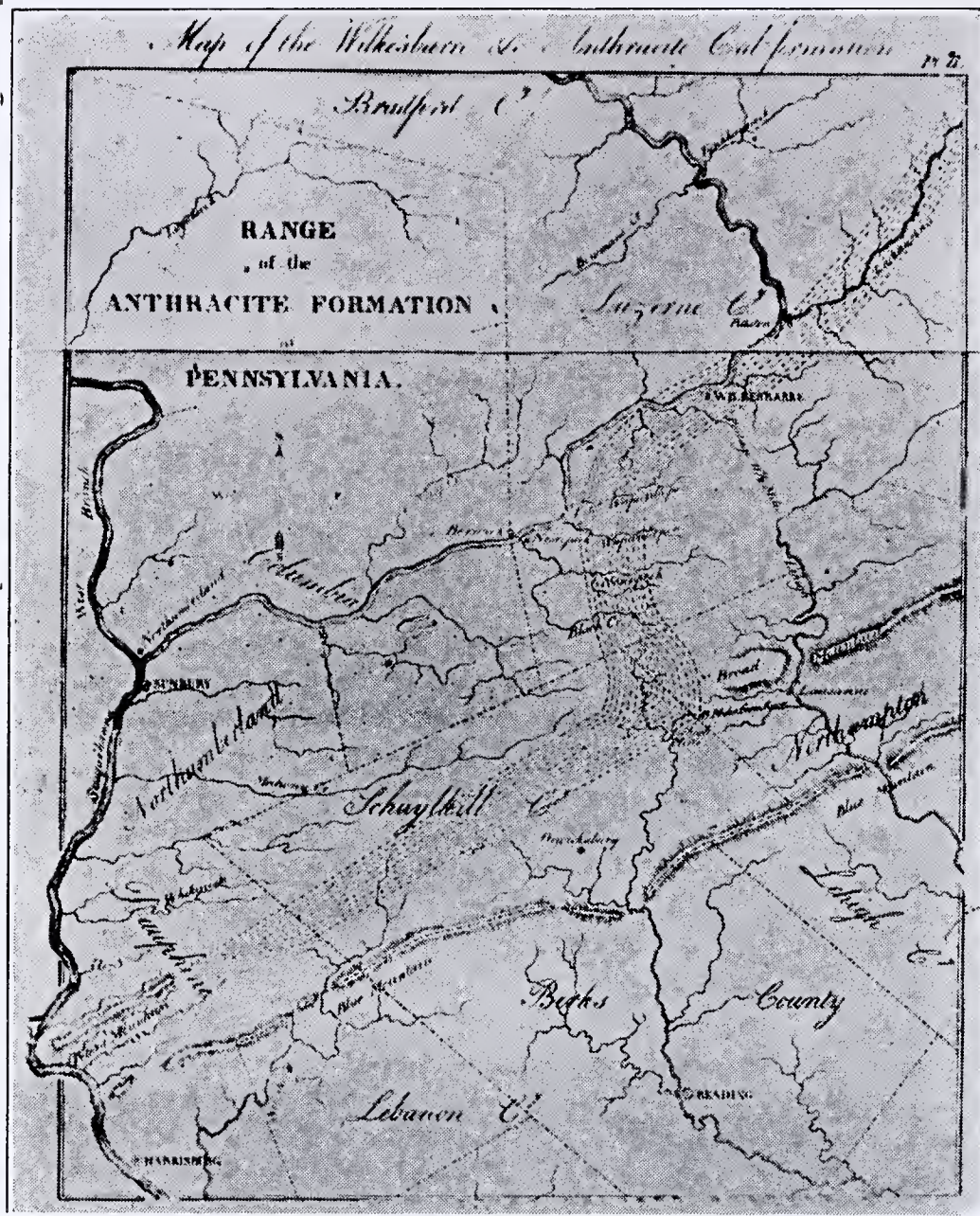
The Bureau of the Census publication of general statistics collected in the census taken in 1930, covering the operations of mines for 1929, gives the summary figures for the United States and for individual States for the mining activities, is one of a series compiled for the Fifteenth Decennial Census. According to this summarization, the average number of wage earners employed in six leading States was 548,089, or sixty-eight per cent. of the aggregate number, 806,418, reported for the United States. The numbers employed in each of these six States were as follows: Pennsylvania, 276,492; West Virginia, 101,422; Kentucky, 57,818; Illinois, 53,378; Alabama, 31,978; Ohio, 27,001. Twelve States—the six mentioned, together with Michigan, Indiana, Arizona, Virginia, Montana, and Colorado—reported a total of 646,678 wage earners, or eight tenths of the aggregate for the United States.

Of \$2,392,831,178 reported as the total value of products for the United States, \$1,404,581,852, or 58.7 per cent., represents the output of six States, as follows: Pennsylvania, \$694,975,146; West Virginia, \$223,930,754; Illinois, \$132,948,261; Minnesota, \$132,400,530; Arizona, \$116,477,536; Kentucky, \$103,849,625. These six States and five others (Michigan, Utah, Montana, Ohio, and Alabama) together contributed a total of \$1,762,885,784, or 73.7 per cent. of the aggregate for the United States.

Anthracite Coal—While practically all the anthracite coal in the United States is still produced in an area of about 484 square miles in Carbon, Columbia, Dauphin, Lackawanna, Luzerne, Northumberland, Schuylkill, and Wayne counties of Pennsylvania, and although the peak production amounted to 100,000,000 tons in 1917, 89,000,000 tons were mined in 1927, and 63,000,000 tons in 1928, the indications are that the maximum production has been reached, or is about to be reached, and that during the next two decades the average will probably not amount to more than seventy-five per cent. of the peak production. The value of the average production is about \$400,000,000. The total production of anthracite in Pennsylvania in 1929 amounted to 65,974,551 long tons, valued at \$392,979,161. Anthracite was reported as produced in sixteen counties in Pennsylvania in 1929. Luzerne County alone reported 26,650,000 tons, or 40.4 per cent.; Lackawanna County, 15,246,000 tons, or 23.1 per cent.; and Schuylkill County, 15,505,000 tons, or 22.8 per cent. Of the remaining counties, only two, Carbon and Dauphin, produced more than 1,000,000 tons each. Here are found the largest anthracite mines in the world. About 170,000 men are employed in the industry. About seventy-five per cent. of the output is produced by eight companies. The annual fatalities inside the mines per million tons is 4.5.

The geological survey of 1885 separates the anthracite region of Pennsylvania into the following divisions:

1. The Southern or Pottsville Field extends from Lehigh River at Mauch Chunk southwest to within a few miles of the Susquehanna River, thence to Harrisburg, composing the territory of Carbon, Schuylkill, and Dauphin counties.



The eastern end of the field, known as the Lower Lehigh or Panther Creek Basin, between Tamaqua and Mauch Chunk, has generally been included by the coal trade in the Lehigh field.

2. The Western Middle or Mahanoy Field lies between the easternmost headwaters of Little Schuylkill River and the Susquehanna, and within Schuylkill, Columbia, and Northumberland counties. Southwest these coal fields are designated as the Schuylkill region.

3. The Eastern Middle or Upper Lehigh Field lies between Lehigh River and Catawissa Creek, and principally in Luzerne County, with limited areas extending into Carbon, Schuylkill, and Columbia counties.

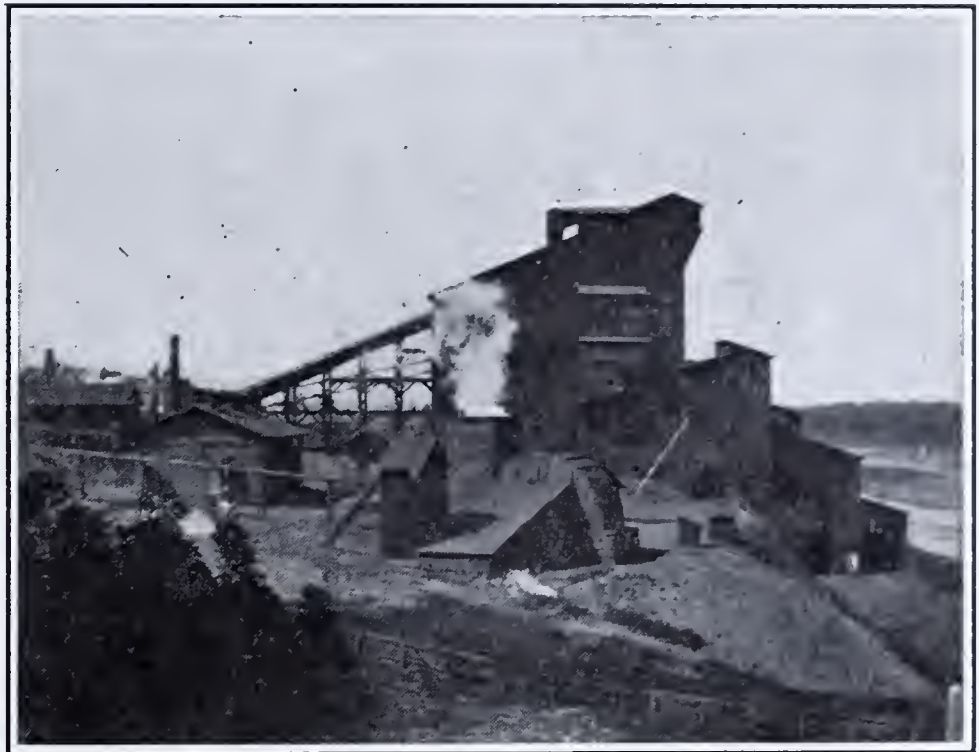
4. The Northern or Wyoming-Lackawanna Field, in the two valleys from which it derives its name, is embraced almost entirely by Luzerne and Lackawanna counties, only a small area in the extreme eastern end extends into Wayne and Susquehanna counties.

5. The Loyalsock and Mehoopany Field embraces Sullivan and Wyoming counties.

In its supervision of the mining properties of the Commonwealth, the act of June 8, 1901, divides the districts as follows: First, Luzerne and Sullivan counties; second, Lackawanna, Wayne and Sullivan; third, Carbon; fourth, Schuylkill; fifth, Northumberland; sixth, Columbia and Dauphin counties.

Since the beginning of the mining of anthracite, due to a lack of market for smaller sizes, millions of tons were dumped on storage or culm piles in the vicinity of the breakers. The storm waters have gradually washed part of this coal into the streams, and it has settled in depressions in the stream beds. On the Susque-

hanna, Schuylkill, and Lehigh rivers, and their larger tributary creeks, a large number of small dredges are used for reclaiming this coal from the stream bed by means of suction pumps. This has developed into an important industry, and, as it is the reclaiming of a natural resource that would otherwise be a total loss, it is, of course, an important conservation measure.



Breaker

Bituminous Coal—Fuel, the most important factor in the process of manufacturing, lay in abundance to the south of Pittsburgh in plain sight of that city. This fuel is bituminous coal. The earliest mention of the use of coal in western Pennsylvania is found in the journal of Colonel James Burd, who was opening a road from Christopher Gist's plan-

tation, present Mount Braddock, to Dunlop's Creek. Under date of September 22, 1759, he wrote: "The camp moved two miles to Camp Run. This run is entirely paved in the bottom with fine stone coal, and the hill on the south of it is a rock of the finest coal I ever saw. I burned about a bushel of it in my fire."

Captain Thomas Hutchins visited Fort Pitt in July, 1760, and found a mine open on the opposite bank of the Monongahela River, from which coal was taken to supply the garrison of the fort. The Reverend Charles Beatty, chaplain of the Provincial Regiment, noted in his journal that coal was used by the garrison at Fort Pitt in 1766. "Coal Hill" was then burning from a fire caused by careless workmen, who were digging some coal from the pit and departed, leaving their fire unextinguished. "It has been burning there for more than a year," wrote Beatty, "and it may become a volcano."

The Proprietaries were well aware of the existence of coal at Pittsburgh and its value as a fuel as early as 1769. Thomas Penn, in that year, wrote to his son, John, directing him to have a survey of 5,000 acres made at Pittsburgh, and in May of the same year he again wrote, saying: "I would not engross all the coal hills, but rather leave the greater part to others who may work them." When the survey was actually made, which included the Manor of Pittsburgh, the privilege of mining the coal was sold for each lot.

George Washington stopped at Christopher Gist's in the autumn of 1770 on his way to the Kanawha and examined the coal pit opposite Gist's home. It is quite possible that Gist was the first person to make use of coal which has since made

Connellsville famous because of its excellent coking qualities. Coal was not highly esteemed except for domestic use for many years after the visit of Burd, Beatty and Washington.

Bituminous coal mining is in much the same condition as anthracite. This industry involves almost the entire western half of the Commonwealth, where about 20,000 square miles are underlaid by deposits. The producing fields cover approximately 14,000 square miles and their production in 1918 reached in excess of 175,000,000 tons, or thirty-one per cent. of the total for the United States; it had a value of \$500,000,000. While it cannot be said that the maximum production has been reached, the relative importance of the Pennsylvania bituminous coal industry will probably not increase perceptibly.

Down to 1845 the coal that was shipped westward from the Pittsburgh district was floated down the Ohio in flat-bottom boats with the spring and fall freshets, each holding about 15,000 bushels. The boats were usually lashed in pairs and were sold or broken up when their destination was reached. In 1845 steam tow-boats were introduced, which towed coal barges down the river and brought them



Foot of Plane, Old Portage Railroad

back empty. At this time Pittsburgh coal found a market in Eastern Pennsylvania, transportation being by way of the Pennsylvania Canal and Portage Railroad in section-boats, which carried the coal from Pittsburgh to Philadelphia without breaking bulk.

The total production of bituminous coal in Pennsylvania in 1930 amounted to 123,417,850 tons, valued at \$211,800,000. Pennsylvania's closest rival in bituminous production was West Virginia, with 120,040,000 tons.

The bituminous coal fields cover the southwestern section, but extend over detached areas until this product is mined in the following counties: Allegheny, Armstrong, Beaver, Bedford, Blair, Butler, Cambria, Centre, Clarion, Clearfield, Clinton, Elk, Fayette, Greene, Huntingdon, Indiana, Jefferson, Lawrence, Lycoming, Mercer, Somerset, Tioga, Washington, and Westmoreland. Of the sixty-seven counties twenty-five produce bituminous coal, with Westmoreland and Fayette leading in production, followed by Allegheny, Washington and Cambria. There are 458,000 square miles of bituminous coal lands in the United States, of which only 480 square miles are in Pennsylvania. The total fatalities inside the mines per million tons is 2.54.

The first use of bituminous coal in a blast furnace was at Sharon, in Mercer County, in 1843.

Coke—Pennsylvania is the mother State of the coke industry. The first coke in the United States was made on the ground in mounds, similar to the burning of charcoal, in 1817, at Plumstock, Fayette County. The first use of coke ovens for making coke was in 1841, when two beehive ovens were built on the farm of John Taylor, on the Youghiogeny River, a few miles below Connellsville, where the Fayette Coke Works now stand.

The first successful use of coke in the blast furnace in the United States was accomplished by William Firmstone, at Mary Ann Furnace, Huntingdon County, Pennsylvania, 1835. Two years later it was used for the same purpose in Fayette County.

Nearly one-fourth of the total production of bituminous coal is used in the manufacture of coke. Connellsville is the coke making center of the world. The total production in Pennsylvania reached a value of \$73,000,000 in 1925, or twenty-eight per cent. of the value of the product in the United States. In 1920 there were 75,298 beehive ovens in the United States and fifty-nine per cent. of them were in Pennsylvania. There were 10,881 by-product coke ovens and of them twenty-nine per cent. were in our Commonwealth. These by-product ovens treat the coal whereby valuable commodities are secured, such as coal tar and its many derivatives, the principal ones being dyes, also ammonia compounds, light oils, gas, paint, roofing materials, medicines, creosote, and other valuable products. In 1930 the total production of coke in Pennsylvania amounted to 14,540,000 tons, valued at \$54,098,000.



Bank of Coke Ovens

OIL.

Extending from the southwest corner of the Commonwealth is the Pennsylvania section of the Appalachian oil field, which, with a small section in New York, furnished nearly all the country's supply of petroleum for some years following the discovery of its value for illuminating purposes. The production of oil and gas is still a most important industry in Western Pennsylvania, but the production of 7,000,000 barrels in 1920 was only two per cent. of the total for the United States, and was a decided drop from the peak of 32,000,000 barrels recorded in 1891.

The gigantic struggle for oil began in Pennsylvania, August 28, 1859, when Colonel Edwin L. Drake struck oil in the world's first well. This small hole drilled through the rock so peacefully opened the way to wealth hitherto unknown. It yielded about forty barrels per day, but the precious fuel was now produced in commercial quantities. It opened also the most important natural production of Pennsylvania after iron and coal. The first well was in Cherry Tree Township, on the Watson Flats, on the bank of Oil Creek, about two miles below the thrifty city of Titusville.

The earliest mention of the existence of petroleum in the United States is contained in a letter written by the French missionary, Joseph Delaroche, July 8, 1627. The locality mentioned is supposed to be near the present Cuba, New York. The earliest mention of petroleum in Pennsylvania appears to be by Charlevoix in his journal of May, 1721, who speaks on the authority of Captain de Joncaire of the existence of a fountain at the head of a branch of the Ohio (Allegheny) River, "the water of which is like oil and has the taste of iron," and was "used to appease all manner of pain." On a map published in 1755 the word "petroleum" appears near the mouth of the present Oil Creek on the Allegheny River.

Venango County seems to have been the native home for petroleum, for although it has been found in large quantities in neighboring counties, it was first gathered there and its presence was known from the advent of man in that vast region. The Indians gathered oil from a stream called Oil Creek, in this vicinity, which they used for medicinal purposes. It became well known all over the country as "Seneca Oil," "British Oil" and other names. It was collected by digging out the place where it oozed out of the ground, and when oil and water had accumulated, blankets were thrown in, taking up the oil, when it was wrung out, and the process repeated.

Reverend David Zeisberger, the Moravian apostle to the Indians, in his journal written in 1769, makes mention of oil, or petroleum, in what is now Forest County. He says: "It is used medicinally for toothache, rheumatism, etc. Sometimes it is taken internally. It is of a brown color and burns well and can be used in lamps." A century since the product of Oil Creek Valley amounted to a dozen barrels a year. The first shipment in bulk was made by a man named Cary, who filled two five-gallon kegs and lashed them on either side of the horse he rode to the market at Pittsburgh. This supply stocked the market. By the year 1865 Venango County shipped 13,000 barrels per day, about the only oil produced in the United States.

Petroleum was desired as an illuminator, but the small quantity obtainable made it too expensive. According to the production records more than one billion barrels of oil were produced in 1923 for a world's record in oil production—and yet the supply was far short of the world demand.

Fish oil is the early known illuminant and lubricant. "Coal Oil," however, still used erroneously as the name for kerosene, was discovered by Dr. Abraham Gesner, who, in 1846, obtained oil from coal. That was enough to ruin the fish oil industry, and soon more than fifty coal oil works were put in operation, distilling oil from bituminous, or soft coal.

A man named Kier, at Tarentum, Pennsylvania, in 1847, bored for salt water and pumped up oil. He put it in barrels and sold it. A professor at Dartmouth College, using some of the oil, told George H. Bissell that in his opinion it could be used for illuminating purposes. Bissell investigated these claims and sent a quantity to Benjamin Silliman, Professor of Chemistry in Yale University, who reported that nearly the whole of the raw product could be treated so as to be used for illuminating and other purposes without any waste. Bissell organized the Pennsylvania Rock Oil Company—which was the first of its kind in the United States.

Drake's Well—In December, 1857, Colonel Edwin L. Drake, one of the stockholders of this company, rode into Titusville on a mail coach from Erie. He carried with him \$1,000 with which to begin boring for oil. He started immediately to his work, but met with many discouragements. Well drillers were unknown and well drilling machinery almost unheard of in 1858. He built his "pump house" and derrick, and with the assistance of "Uncle Billy" Smith, began drilling.

The beginning was made in quicksand and clay, and as soon as the hole was made it filled up with water and caved in. Drake then hit upon the scheme of driving an iron pipe through to bedrock, and its success made the use of this method the standard practice of today in the oil fields everywhere. After rock was reached they bored but three feet per day, but by Saturday, August 27, 1859, the well had reached the depth of sixty-nine feet and the drill was working in coarse sand. Smith and his sons, who were helping him, had finished for the week. As they were quitting the drill dropped six inches, apparently into a crevice, as was common in salt wells. No attention was paid to this circumstance, the tools were drawn out and all hands adjourned to Titusville. Sunday morning Uncle Billy strolled out to the drill, and to his astonishment found the well filled within a few feet of the surface with a dark fluid. It was oil. The news soon spread to the village, and when Colonel Drake appeared he found Uncle Billy guarding three barrels of petroleum. The pumping apparatus was adjusted, and by noon the well was producing at the rate of twenty barrels per day. The problem of the ages had been solved. The world's first oil well was in production.

Samuel Smith, who helped drill the Drake well, is still living (1933), and makes an annual visit to the now sealed well.

Then began what has been called the "oil fever." People from all parts of the country flocked to western Pennsylvania. Oil companies were everywhere organized, whose stock was sold on the market. Land which for generations had been regarded as almost barren, sold for fabulous prices. Merchants, politicians, mechanics, physicians, clergymen, everybody seemed crazy. Fortunes were made in a day. Millions more were to be speedily realized. The slow and common way of accumulating money had forever passed. The oil was to pay, and ten times more than pay, the cost of the War of the Rebellion, then in progress. It was to draw all the hard money from the Old World, and concentrate the wealth of the Indies—East and West—in Pennsylvania. Men were drawn into the vortex who never speculated before. Land in the oil regions rose in value from a few cents an acre to thousands of dollars.

In the midst of this general excitement, prospecting for oil became most amusing, and one would have supposed the days of the old astrologers and necromancers



Early Oil Field of Pennsylvania

had returned. The "diviner's rod," and the "witch hazel" were brought into requisition to point out just where the wonderful commodity was to be found.

"Coal Oil Johnie," an ignorant young man, whose paternal acres had long brought only poverty and were now found to be located with wealth, appeared in Philadelphia, scattering ten dollar bills in all directions, and buying teams of horses on one day, only to give them to his coachman on the next. He built an opera house in Cincinnati and ended his career as its doorkeeper.

In 1860, near Rouseville, the oil flowed out of a well without the use of a pump, and other flowing wells in adjacent localities were soon found.

Oil was first transported in wagons and boats. The railroads were laid out to Oil City in 1865. In 1865 Samuel Van Syckel had constructed a pipe line four miles in length, and the result was a change in the entire method of transportation.

The Pennsylvania grade of crude oil is the best lubricant that man has ever

found. And since refineries can add nothing to an oil that was not present in its crude state, Pennsylvania grade or crude oil is still supreme. More than one hundred products are manufactured at the refineries from this crude oil.

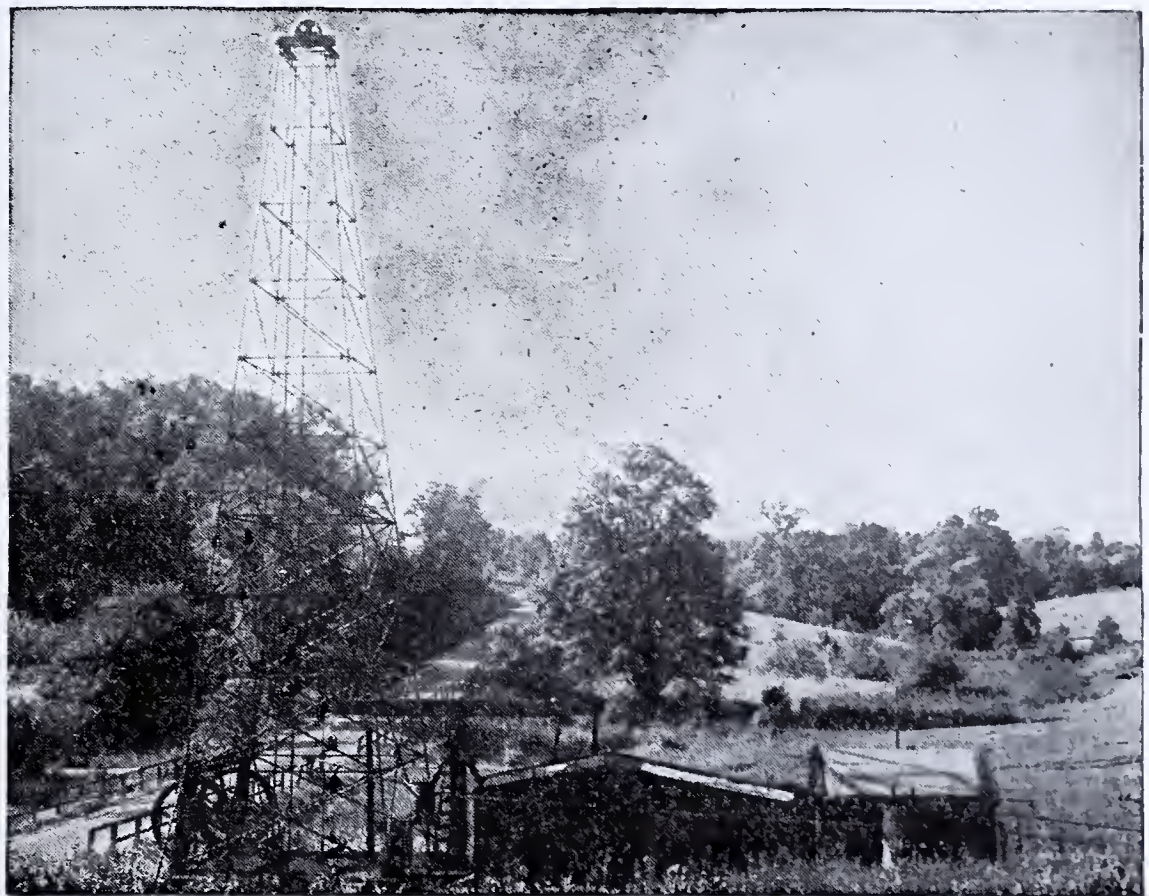
The largest individual fortune the world has ever seen is the outcome of the development of the business of securing and distributing coal oil.

A few weeks was often sufficient to create a center of business activity. Pit Hole City, in Venango County, was but a farmhouse in May, 1865, and by September had sixteen thousand inhabitants, and was incorporated November 13, 1865. It dwindled to a hamlet of six persons within one year, on account of the failure of its oil wells.

Oil is found in McKean, Warren, Forest, Venango, Crawford, Clarion, Jefferson, Butler, Allegheny, Washington and a few other counties in western Pennsylvania.

In the refining of oil Pennsylvania takes higher rank than in the product of her wells, the output of of her refineries running to six per cent. of the total for the United States. Samuel M. Kier, of Pittsburgh, was the first person to demonstrate the practicability of refining petroleum, in 1850. He erected a small experimental refinery in Pittsburgh. The first refinery on a commercial basis was built at Corry in 1862.

Pennsylvania is the mother State of the natural gasoline industry, which was first



An Active Oil Well

started near Titusville, in 1904. Butler County leads today in this industry. The total of such plants in the United States in 1921 numbered 1,151, of which twenty-six per cent. were in Pennsylvania. The annual production in gallons was 383,000,000, of which Pennsylvania produced only six per cent. in 1921.

Salt—At the close of the French and Indian War no salt had been made in the British Colonies of North America. This necessary commodity was all imported. Governor Robert Hunter Morris, of Pennsylvania, in a petition to Par-

liament, offered to establish the industry in Pennsylvania at his own charge, if he should be permitted to enjoy the profits for such a term of years as would compensate him. It is not a matter of record where he proposed to establish his works or the method of operation, or if Parliament ever gave any attention to his prayer.

Pennsylvania did, however, command a position of prominence in the manufacture of salt. Major S. S. Jamison, of Saltsburg, Indiana County, who died in 1887 in his eightieth year, says, in his reminiscences: "In the early days, say from 1800 up to 1812, all the iron, salt, etc., to supply the wants of the people of this country was brought from the East on pack-horses. In the fall of the year they would start east, each man with three horses and pack-saddles loaded with linen, cloth, flax, etc., and return with iron and salt." Until western Pennsylvania began to make its own salt much of this necessary commodity used by the pioneers was obtained in eastern markets. The charter for at least one of the early turnpikes leading to Pittsburgh stipulated that west-bound wagons hauling salt should not be subject to the payment of the toll.

Egle's "History of Pennsylvania" contains the following document of the discovery of salt in western Pennsylvania: "About the year 1812 or 1813 an old lady named Deemer discovered an oozing of salt water at low-water mark on the Indiana side of the Conemaugh River, about two miles above the present site of Saltsburg. Prompted by curiosity she gathered some of the water to use for cooking purposes, and with a portion of it made mush, which she found to be quite palatable. About the year 1813 William Johnson, an enterprising young man from Franklin County, commenced boring a well at a spot where Mrs. Deemer made the discovery, and at a depth of 287 feet he found an abundance of salt water. The salt sold at \$5.00 per bushel, retail, but as wells multiplied the price came down to \$4.00. Seven wells along the river on the Westmoreland side were all put down prior to 1820 and 1822; and from that date till 1830 the group of hills on both sides of the river was like a great beehive." There were twenty-one salt works, embracing twenty-four wells, in operation on the Conemaugh River in Indiana and Westmoreland counties, all of which, except three, had been abandoned in 1876. Other salt works were operated in Armstrong, Erie, Allegheny, Beaver, Butler, Fayette, Clearfield, Tioga, Cambria, Susquehanna, Bradford, Cameron, and McKean counties. The salt industry in Pennsylvania reached its peak in 1860. Since 1889 it has been confined to one operation in Pittsburgh. It may be classed among the lost industries of Pennsylvania.

Glass—Pennsylvania cannot claim much antiquity in the manufacture of glass for that dates from the first period of Egyptian history. But there are many interesting and important incidents and not a few firsts in the story of glass.

The first glass factory in Pennsylvania was established at Philadelphia in August, 1683. Penn wrote at that time: "The saw mill for timber and the place for the glass house are conveniently posted for water-carriage." In March, 1684, Pas-

torius wrote that "a mill and glass factory are built at Franckfurt," now a part of the city of Philadelphia. Both writers referred to the same glass factory.

At present the glass sand industry is practically confined to two parts of the Commonwealth, namely: the central portion and the western part. Of these the central area is by far the more important, both as regards the total tonnage of glass sand produced and its better quality for glass making. This productive area is confined to several localities in Huntingdon and Mifflin counties, in the vicinity of Mapleton, Vineyard, and Granville, between Huntingdon and Lewistown. In the western part of the State the workable deposits are distributed over a much greater area, but the quality of the sandstone available is not so good as that of the central area. In the western region glass sand quarries are being operated in Elk, Fayette, Westmoreland, Jefferson, Venango, and Warren counties. Glass plants are located in each of these counties and also in Blair, Potter, McKean, Clarion, Clearfield, Armstrong, Indiana, Butler, Beaver, Allegheny, and Washington counties. Plants are also in Philadelphia, Montgomery, Berks, Monroe, and Wayne counties in eastern Pennsylvania.

Baron von Stiegel—The early German settlers of Pennsylvania were generally poor and laid no claim to aristocratic descent. A special interest, therefore, attaches to the career of Heinrich Wilhelm von Stiegel, or "Baron" Steigel, the solitary German nobleman who attempted to maintain the dignity of his rank in the wilds of Pennsylvania.

He came to Philadelphia in 1750, while in affluent circumstances. In 1757 he went to Lancaster County and purchased one-third of a tract of 714 acres from the Messrs. Stedman, of Philadelphia, and laid out the town of Manheim, according to a plan of his native city, which he had brought with him from the fatherland.

He erected a large brick house, a portion of which is still standing, which the simplicity of the times called a castle. The bricks were imported from Europe; there were Dutch tiles in the fireplaces, on which were painted scriptural representations, and a coarse kind of tapestry hung upon the walls. One room was set apart as a chapel, in which Stiegel was accustomed to conduct divine worship. Everything about the house would tend to show that the baron was a gentleman of cultivation and refinement.

In order to furnish labor for the inhabitants of his new town, the baron erected extensive glass works, which were first put in operation October 6, 1764. First in Pennsylvania to attempt the making of flint glass, he did more than attempt, he succeeded; and for ten years his Manheim factory made bottles, tumblers, wine glasses, vases, jugs, dishes and colored glass, supplying the needs of distant colonies as well as Pennsylvania. Many pieces of the "Stiegel glass" are to be found today in the possession of collectors.

Stiegel also engaged extensively in the iron business. In 1757 he purchased the Huber Furnace, six miles from Schaefferstown, and built on the site a much larger

one, naming it for his wife, Elizabeth. He also owned Charming Furnace, on the Tulpehocken Creek, Berks County.

In buying Elizabeth Furnace, Steigel had as partners John Barr and Alexander and Charles Stedman. An unfortunate connection this seems to have been. In his transactions with the Stedmans, through a number of years, their business shrewdness was greatly superior to his. Another hindrance to the baron's permanent success was the buying of too much land.

Many ridiculous stories are told of Stiegel's extravagance and love of display. There is no doubt that he lived in a style which to his simple-minded Mennonite neighbors appeared exceedingly imposing. It is said that when he would return to Manheim from a journey in his coach and four, a cannon would announce his approach, and on arriving at the house, he was greeted by favorite airs, played by his workman band, gathered in the large balcony on the roof of the mansion. Then came an end for his carefree days. The deplorable business condition in America at the time of the pre-Revolutionary War days was too much for his enterprise. He was unable to meet his obligations, owing to the bad faith and toryism of the Stedmans. He was thrown into prison for debt in the autumn of 1774. The General Assembly passed a special act, December 24, 1774, by which he was liberated. He struggled manfully against the debt which eventually overwhelmed him in disaster.

Stiegel became foreman at Elizabeth Furnace, where he made shot and shell for the Continental Army by the aid of Hessian prisoners of war. He left Elizabeth Furnace in 1778, and his last years were truly tragic. He was a bookkeeper at Charming Furnace and then tried to support himself and his family by teaching school. His former workmen assisted him by sending their children to be taught. He struggled against poverty until the death of his wife, then he returned to Charming Furnace, where he died in 1783, aged fifty-four years. His later misfortunes have overshadowed the remembrance of his follies, and with latent perfume of the yearly Feast of Roses, in Manheim, his name seems to come safely and pleasantly down to our time.

Hon. Albert Gallatin, the famous Secretary of the Treasury, started a glass factory at New Geneva, on the Monongahela River, Fayette County, Pennsylvania, in 1787, where he made the first glass west of the Allegheny Mountains in the United States.

The credit for making the first glass in the Pittsburgh district belongs to General James O'Hara and Major Isaac Craig. In 1796 they persuaded William Eichbaum, a German glass worker, to leave the management of the Schuylkill Glass Works, near Philadelphia, and take charge of the erection and operation of a glass works in Pittsburgh. They also purchased some coal property and used this fuel in the manufacture of green glass, the first glass works in America to employ it. This first works consisted of an eight-pot furnace and turned out three boxes or about 300 square feet of window glass per day. Bottles and other "hollow ware" were

also made. The second glass factory was opened by Denny and Beelen at what is now Manchester, in 1800, called the "Ohio Works." From that time forward the manufacture of glass multiplied until today Pittsburgh is the leading glass market of the world.

Flint Glass—The first flint glass house in the United States was established in Pittsburgh in August, 1808, by Benjamin Bakewell, Benjamin Page, and Edward Ensell. The success of this enterprise is due to Mr. Bakewell. They were awarded the Franklin Institute medal over many competitors in October, 1825, for the finest specimen of cut glass.

The "Commonwealth" for August 20, 1809, in an article on the manufacturing carried on in Pittsburgh, said: "Glass Works. Of these we have three in handsome operation, and a fourth at New Geneva, fifty miles up the Monongahela River. Two of these in town make all kinds of flint glass, tumblers, wine glasses, decanters, etc., to the amount of about \$30,000.00 annually. The other two make green bottles, window glass, etc., to the value of say, \$60,000.00 annually. Stone or pit coal is their fuel, which costs five cents per bushel."

Glass in all conceivable varieties and shapes is now produced. At the beginning of this century the window glass produced in Pittsburgh district amounted to more than \$5,000,000, or nearly fifty per cent. of that for the entire United States. The plate glass amounted to nearly four millions, or sixty per cent. of the total; the pressed glass, table ware, bottles, and other hollow ware amounted to two and a half millions, or about twenty-five per cent. of the total; the lamp glass to two and a half millions, making a total glass production of more than fourteen millions, or nearly one-half of the entire output of the United States.

One of the leading glass manufacturing centers at present is in Wayne County, where they began making glass at Bethany in 1816. The Dorflinger Works at White Mills at one time manufactured most of the art glass made for table use in the United States.

Molding sand is dug in no less than thirty counties in the Commonwealth.

Tin—One of the most curious phases of the history of the American iron industry is the fact that although the United States at one time consumed nearly sixty per cent. of the world's entire production of tinned plates, with the exception of a few sporadic attempts in 1873 and 1875, no tin or terre plates were made in the United States until 1891.

Successful experiments in the manufacture of tin plates had been made prior to 1890, but had been abandoned because the tariff duties were too low. A new tariff, effective July 1, 1891, caused the United States Iron and Tin Plate Company, of Allegheny County, to engage in its manufacture, and soon others began to produce tin plates until nearly 400,000 tons were made in the United States in 1904, of which Pennsylvania produced sixty per cent. The great tin plate industry of

New Castle has caused that thriving place to be popularly known as the "Tin City of America."

Nickel—The first malleable nickel made in the world was produced from Pennsylvania nickel ore by Joseph Wharton in 1876.



Tin Mill, New Castle

For many years the nickel mines in Bart Township, Lancaster County, known as the Gap Mines, were an important mining interest, and the only nickel produced in the United States came from these mines at Gap. They were first worked for their copper from the year 1718, but, in 1852, it was discerned that large quantities of nickel had been mined with the copper and thrown away as refuse. The Gap Copper Mines at once became the Gap Nickel Mines, and smelting works were put up nearby. There were mined and smelted more than 600 tons of ore in a month when production was at its peak, but the industry has long since been abandoned.

Zinc—Metallic Zinc was first successfully made in this country by Joseph Wharton, at South Bethlehem, in 1859. Zinc is an ore of much value mined in



Zinc Plant, Palmerton, Carbon County

Lehigh County. One of the largest plants in the world for the production of zinc products is in Palmerton, Carbon County.

Calamine, or zinc silicate, is found in Chester, Columbia, Lancaster, Lehigh, and Montgomery counties. Goslarite and sauconite are mined at Friendsville, Lehigh County. Smithsonite, or zinc carbonate, are found in Blair, Lancaster, and Lehigh counties. Sphalerite, or zinc blende, is found in Blair, Bucks, Chester, Columbia, Lancaster, Lehigh, Montgomery, and Philadelphia counties.

Cement—Another natural product of Pennsylvania that has given the State prominence in industrial operations are the rocks that supply the requisite materials for what is commonly known in this country and Europe as Portland cement. Cement is the product which has revolutionized the building industry. There are three kinds of cement—hydraulic, which sets under water; natural, which is produced by burning a naturally impure limestone containing proper elements at a low temperature; and Portland, which is an artificial chemical product of definite composition.

Of these various cements made in the United States, Portland cement has the greatest production because of its adaptability to use in various ways. Pennsylvania leads the country in the production of Portland cement for the reason that in the Lehigh Valley there are concentrated large deposits of rock which possess all the necessary ingredients and because of its proximity to the source of fuel and to the greatest markets.

In 1850, while the canal was being built along the Lehigh River, workmen uncovered a limestone rock which, when ground, made a good cement. Twenty-five years later it was discovered that by grinding together this limestone rock and shale, found near each other in the Lehigh Valley, a better cement was produced. Before long these “natural cements” had to give way when the manufacture of Portland cement commenced.

David O. Saylor, of Allentown, Pennsylvania, in 1870, was operating a small natural cement works at Coplay, and his experiments, in which he was assisted by John W. Eckert, a graduate chemical engineer of Lehigh University, developed the process for making Portland cement.

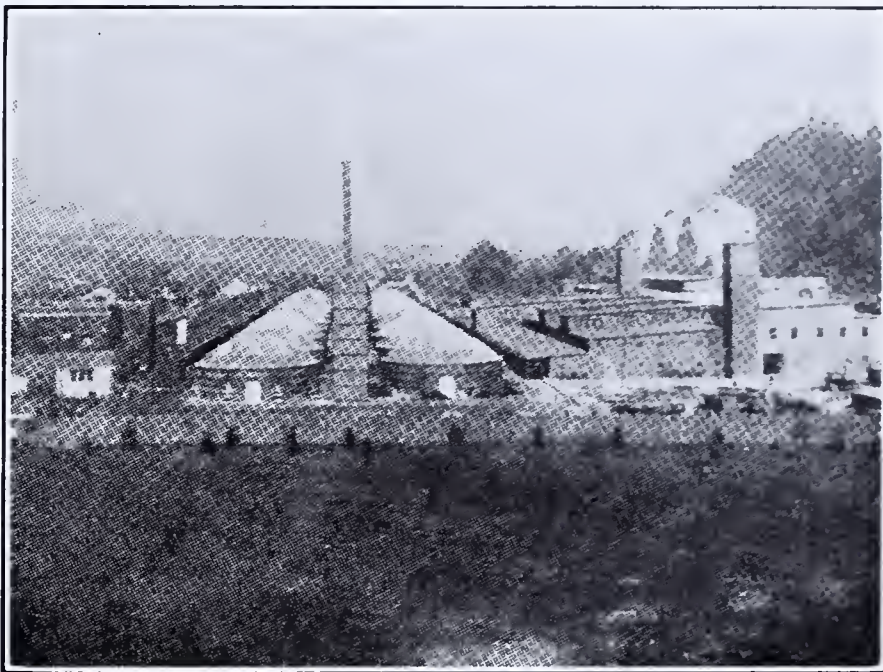
In 1875 a true Portland cement was being made commercially by William P. and John K. Shinn, in a small plant at Wampum, Lawrence County, Pennsylvania, called Crescent Portland Cement Company, which is still in existence, and is the oldest such plant in America. Blast furnace slag and limestone are used at Pittsburgh for Portland cement. Clay dug in Blair, Cumberland, and Monroe counties is used for making white cement.

At this time seventeen of the twenty-three cement plants of Pennsylvania are located in Lehigh and Northampton counties, there being one at Evansville, Berks County; one at York; the Universal and Bessemer plants in Allegheny County, and Wampum and New Castle, in Lawrence County. The only natural cement plant in Pennsylvania is at Siegfried, Northampton County.

The total annual production of Portland cement in the United States in 1920 was 100,023,000 barrels, of which twenty-eight per cent. were made in Pennsylvania. Of 117 plants in the country nineteen per cent. were located in this Commonwealth.

Clay Products—Clays are widely distributed and well developed, as are the shales from which paints are made.

The production of clay products in 1925 was valued at more than \$400,000,000, of which Pennsylvania produced in value \$54,000,000, or thirteen per cent. of the total national output. The pottery plants are in Montgomery, Chester, Lancaster, York, Adams, Dauphin, Columbia, Mifflin, Clearfield, Clarion, Armstrong, Westmoreland, Washington, Allegheny, Beaver and Lawrence counties. Fire brick are made west of the Allegheny Mountains and in Berks



Refractory Plant, Clearfield County

and Montgomery counties, while all but about eleven counties produce brick or tile. Excellent shale brick are manufactured in many places, but none are superior to those made at Watsonstown and Milton. Shale is found in Pennsylvania in the three principal colors of black, yellow, and red.

Stone—Pennsylvania is the largest producer of sandstone in the United States, and has many possibilities for future development. Its principal uses are for building purposes, paving blocks, curbing, flagging, and refractory material. In its quartzite form its use as ganister or refractory material for making silica brick, ferrosilicon, and furnace or converter linings, is alone an important industry for Pennsylvania, as about two-thirds of the total ganister production in the United States comes from this Commonwealth. One of the finest building stones in the country is found in Greene County. This sandstone possesses the desirable qualities of the popular limestones of Bedford and Indiana counties, and Kentucky. The most popular building stone in the United States is the limestone from Bedford and Indiana counties, Pennsylvania, and Bowling Green, Kentucky. The rock known as bluestone is abundant in Wayne, Pike, Susquehanna, Bradford, Wyoming, Lackawanna, Potter, McKean, Lycoming, Clinton, Schuylkill, Westmoreland, Fayette, and Greene counties.

Pennsylvania produced twenty per cent. of the total production of sandstone in the United States in 1920 and thirteen per cent. of all the bluestone.

The brownstone quarries at Hummelstown are of immense proportions and the highest quality.

Bedford, Ind. is meant

Slate—Slate is a famous Pennsylvania product. The first slate quarry in Pennsylvania was opened in Upper Bethel Township, Northampton County, about the year 1812. Since then the industry has added much to Pennsylvania's wealth.

The slate belt of Pennsylvania first appears in the eastern corner of York County and then sweeps around in a gradually narrowing curve to the Susquehanna River. It reappears on the eastern bank of the Susquehanna in Lancaster County, but can be traced for a comparatively short distance from the river. While the belt is quite limited in extent, being but six miles long and less than a mile in width, it is, nevertheless, producing a very high grade product. It is from this belt that the well-known "Peach Bottom Slate" has come. This belt continues in Maryland for a short distance. There is a slight deposit of slate in Dauphin County.

Bangor and Pen Argyl and Slatington, in Northampton and Lehigh counties, are the slate centers of greatest activity. This belt is two to four miles wide on the south side of Blue Mountain, and extends from Delaware Water Gap in a west-southwest direction to a point four miles west of Lehigh Gap, a distance of thirty-two miles. The slate from Northampton and Lehigh counties is the only kind in the United States used for school blackboards.

There were 108 slate plants in the United States in 1920, of which number forty-five per cent. were in Pennsylvania, but these of such size and importance that they produced fifty-seven per cent. of the total squares of slate produced in 1920. Quarrying and milling of slate in Pennsylvania has been on a commercial basis for nearly a century, since experienced slate miners were imported from Wales in 1845 to work mines in the State.

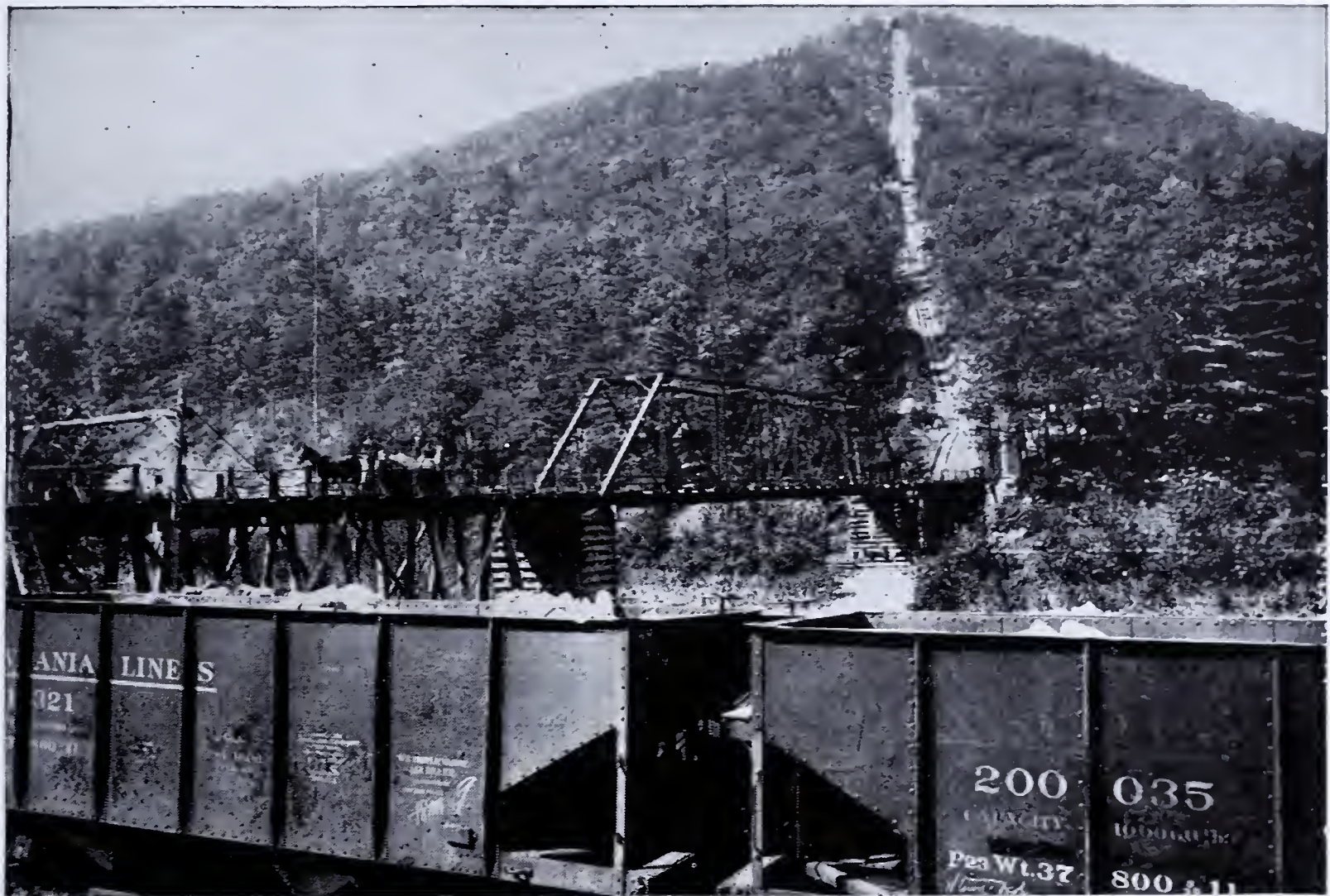
The total output of slate in the United States for 1925 was about \$13,000,000, of which amount Pennsylvania produced about forty-seven per cent.

Granite—Although Pennsylvania is a great stone producing State, it does not possess extensive supplies of high grade granite. It produced only two per cent. of the total production of granite in the United States in 1920. Dark blue granite is obtained in the French Creek Valley and in the vicinity of Quakertown, Bucks County. Granite has been quarried in Berks, Bucks, Chester, Delaware, Lancaster, Lehigh, Montgomery, and Philadelphia counties, and marble has been quarried in Chester, Luzerne, Montgomery, Northampton, and York counties.

Trap Rock—This stone is crushed and used for road ballast purposes and for concrete. It is found in the southeastern counties, except one quarry each in Northumberland, Perry, Dauphin, Adams, and Luzerne counties. Pennsylvania produced seventeen per cent. of the total value of trap rock produced in the United States in 1920.

There are only a few counties in which sand and gravel plants are not in operation. Trap rock and ganister occur in the eastern counties and is quarried in Adams, Montgomery, and York counties extensively. The term trap rock is used as a trade name incorrectly in Pennsylvania for indurated shale and sandstone,

which are quarried in Berks, Bucks, Chester, Dauphin, Delaware, Luzerne, Montgomery, Northumberland, Perry and York counties.



Ganister Rock

Lime—One-third of the 496 plants producing lime in the United States are located in Pennsylvania, and these produce one-fourth of the 3,200,000 tons of the Nation's output. Centre County leads the counties of the Commonwealth in lime production, with York second, and Lebanon third. No other county is close to these three. Limestone is quarried over a large portion of the Commonwealth for building stone, cement making, crushed stone and flux.

Wood Pulp and Paper Plants—There were 804 wood pulp and other paper plants in the United States in 1922, of which eight per cent. were located in Pennsylvania, and just eight per cent. of the annual cords of wood pulp consumed were used in Pennsylvania mills. There are wood pulp plants in Erie, Elk, Clinton, Blair, Monroe, York, Montgomery, and Philadelphia counties. Other paper plants are located in Delaware, Chester, Montgomery, Bucks, Northampton, Berks, Luzerne, Columbia, Lancaster, York, Franklin, Westmoreland, Washington, Lawrence, and Allegheny counties.

Mineral Waters—There were 569 mineral water springs in the United States in 1920, and of this number forty-one were located in Pennsylvania, but

these produced only three per cent. of the total number of gallons sold, or 2,163,931 gallons, valued at \$190,459.

Lithia springs are active in Crawford and Venango counties; alkaline mineral springs in Allegheny; mineral springs in Allegheny, Westmoreland, Bedford, Lawrence, Crawford, Blair, Bradford, Luzerne, Monroe, Northampton, Bucks, Delaware, Chester, Berks, Lancaster, Lebanon, and Cumberland counties.

Soda Water—Philadelphia is the home of soda water. Dr. Joseph Priestley, the English scientist, who came to Pennsylvania, dying at Northumberland, is credited generally with having been the first to show how carbonic acid gas could be introduced into water. About the same time a Philadelphia physician, Dr. Physick, induced John Hart, the druggist, to experiment in the making of artificial mineral water. About a century ago the firm of druggists, Smith and Hodgson, in Philadelphia, began the manufacture and sale of a mineral water that was palatable, the water being carbonized by a process of their own invention. It is believed that F. Hazard Lippincott made the first soda fountain in 1838. Today the largest establishment in the world for the manufacture of soda fountains is a Philadelphia enterprise. Robert Greene, of Philadelphia, was the first to discover ice cream soda, in 1874. His descendants are prominent makers of soda fountains.

Natural Gas—Natural gas and petroleum are allied products. As petroleum was often found in the wells that had been bored for salt, so natural gas was often found in wells that had been bored for petroleum. Sometimes all these products were found in the same well.

The existence of natural gas west of the Allegheny Mountains has long been known. Its presence in Kanawha Valley is mentioned by Thomas Jefferson in his "Notes on Virginia." Soon after 1840 gas was found in many salt wells in this valley and it was used for both heating and illuminating purposes. But it was not brought into general use until long after Colonel Drake's first oil well produced petroleum. At first it was allowed to escape into the atmosphere, but subsequently its great value caused it to be directed into pipes.

In June, 1872, a gas well 1,335 feet deep near Fairview, Butler County, was abandoned on account of flow of water and gas. A few months later the pressure of gas became so strong that it forced all the water from the well, and a company was formed to utilize the product. A pipe was laid to Fairview, two miles distant, then later extended to Petrolia, three miles farther, and under a pressure of eighty pounds the gas was extensively used for heat and light. At Newton, five miles distant from Titusville, gas was struck at a depth of 786 feet, which escaped with such tremendous force as to blow out the pump and tools. The roar of gas, 100 feet in the air, was heard ten miles distant. A company was organized to utilize the product. On August 1, 1872, it was conveyed to Titusville in a pipe and extensively used there and by farmers and manufacturers nearby.

The first such well bored exclusively for gas was in the celebrated Murrys ville district in Westmoreland County in 1878, but the fuel was wasted for five years because its flow could not be controlled. About 1880 natural gas received much attention as a fuel in manufacturing plants of Western Pennsylvania, and by 1883 it was used in the iron and steel mills of Pittsburgh. The first iron works to use gas as fuel was the Siberian Rolling Mill of Leechburg, Armstrong County, Pennsylvania, in 1874. Spang, Chalfant & Co., of Pittsburgh, used it soon after 1874.

Natural gas production, in 1917, approximately 130,000,000,000 cubic feet, had decreased by 1921 to 75,000,000,000 cubic feet. But Pennsylvania is still producing a value of natural gas equal to that of any other State except West Virginia.

Electric Power—Pennsylvania's electric transmission lines used in public service command the attention of the country. In 1927 there were 45,000,000,000 kilowatt hours of electrical power sold in the United States, of which Pennsylvania consumed nine and one-half per cent. of the total. There were 22,000,000,000 kilowatt hours sold for power alone, of which Pennsylvania used thirteen per cent. There were 8,467,000 residential customers, of which six and one-half per cent. were Pennsylvania homes.

According to the Federal Census of 1930, the State of Pennsylvania reported the largest power installation of any State, accounting for 2,189,218 horsepower, or 29 per cent. of the total. West Virginia ranked second with 670,544, or 9 per cent.

In steam-engine capacity Pennsylvania ranked first, with 633,489 horsepower, or 36 per cent. of the total, and Michigan, Illinois, and Minnesota together accounted for 395,428, or 23 per cent.

Of the total capacity of steam turbines, 684,878 horsepower, Pennsylvania reported 212,364, or 31 per cent., and Arizona reported 104,943, or 15 per cent. of the total.

Electric motors driven by purchased energy were reported for every State and represent a total of 4,771,818 horsepower, of which Pennsylvania reported 1,316,172, or 28 per cent., and West Virginia 562,621, or 12 per cent.

The leading States reporting electric motors driven by energy generated by enterprises within the industries were as follows: Pennsylvania, with 566,986 horsepower, or nearly 42 per cent., and Arizona second, with 167,436 horsepower, or 12 per cent.

For the electric generators, with a total rating of 736,347 kilowatts, Pennsylvania reported 198,089 kilowatts, or 27 per cent., and Arizona 100,153 kilowatts, or 14 per cent.

Pennsylvania is the center of the super power system as determined by the survey authorized by Congress June 30, 1921. This area embraces the States of New England and parts of New York, Pennsylvania, New Jersey, Delaware, and Maryland. Within this zone is concentrated one-fourth of the population of

the United States, and within it are operated (in 1927), most of them independently, 315 electric utilities, 18 railroads, and 96,000 industrial plants. This super power zone is the finishing shop of American industry.

The survey proposed the following order of development: The construction of a steam-electric plant near Pittston, to supply a part of the energy to the anthracite division of the super power zone, and the remainder to the metropolitan division, particularly New Jersey; the construction of a steam-electric plant near Sunbury to supply a part of its energy to the anthracite division, a part to the Reading load center, and the remainder to Philadelphia; the construction of hydro-electric plants on Delaware and Susquehanna rivers to supplement the steam plants above mentioned; the progressive development of the Hudson River projects to meet the growth of energy requirement of the Schenectady, Utica, Poughkeepsie and Pittsfield load centers; the construction of a steam-electric plant near Boston; another near New Haven; and a hydro-electric plant in the Potomac River.

Of these seven plans the first three are interesting to Pennsylvania. In the lower thirty-five miles of the course of the Susquehanna river there is a fall of 220 feet, so distributed that most of it may be utilized for power at four points—Conestoga or Safe Harbor, Holtwood, Conowingo, and a point about two miles above Point Deposit. As the Susquehanna has no favorable sites for storage reservoirs it must therefore be developed for "run-of-river" power. There are already hydro-electric plants at Conowingo, Maryland, Holtwood and Safe Harbor, in Pennsylvania.

On the Delaware, between Hancock and Belvidere, a distance of 125 miles, there is a fall of 600 feet. The development there is effected by means of a series of dams, each of which back up the water on Wallenpaupack Creek.

MANUFACTURING.

The history of manufacturing in Pennsylvania is the story of intelligence, energy, perseverance, and foresight of individuals. The patient industry of the Quaker settlers planted them, the untiring energy of their descendants, and of the German and Scotch-Irish who followed, prospered them. The zealous individual work originated and improved the various manufactures, perfecting while developing the industry. Under this system there arose that diversity of labor which multiplies both the product and the establishments.

The earliest efforts of the colonists at the manufacture of coarse woolen fabrics for their own use excited the jealousy of English manufacturers of the same fabrics, lest they should not only supply their own necessities, but in course of time should export to foreign nations. As early as 1699 Parliament declared by act that no wool, yarn, or woolen manufactures of the American plantations shall be shipped there, or even laden in order to be transported from thence to any place whatever. Again, in 1719, it was also declared "that the erecting of manufactories in the colonies tended to lessen their dependence upon Great Britain." In 1732 the exportation of hats was prohibited, and even the number of apprentices to be taken by

hat makers restrained. In 1750, while the importation of pig and bar iron into England was permitted duty free, the erection or continuance of any mill or other engine for slitting or rolling iron, or any planing-forge, to work with a tilt hammer, or any furnace for making steel was to be punished with a penalty of £200, and every such mill, engine, furnace, or forge was declared to be a common nuisance, to be abated by the Governor within thirty days. In 1764-65 the Stamp Act followed, declaring null and void any instruments in writing, if not upon stamped paper. Then followed the act laying duties on paper, glass, painter's colors, and other articles, when imported into the colonies.

At a meeting of the citizens, held in Philadelphia May 20, 1774, they encouraged domestic manufacture of woolens, salt, saltpetre, iron, nails, wire, steel, paper, glass, wool, combs, cards, copper in sheets, kettles, malt liquors, and tin plates. They also suggested the utility of raising flax, hemp, madder, wool, and dyestuffs, and advised the exclusive use of home-manufactured articles. None of the British North American Colonies was so able to become the "Industrial Titan of America" as was Pennsylvania, and it produced so much to help in the great war for independence which was then imminent.

The love of agriculture and commerce was deeply rooted, but our vast deposits of coal and iron figured largely in determining the policy of Pennsylvania. Tench Coxe, of Philadelphia, was one of the very first to sense the manufacturing possibilities, and when cotton was still growing in gardens among rose bushes and honeysuckle vines, he believed it would some day be king in America. No sooner had the Revolution ended than Coxe tried to import a model of Awkwright's famous spinning jennies, but the British Government seized it on the eve of shipment, and Massachusetts set up the first stock-cord and spinning jenny.

Various schemes were set in motion to encourage the manufacture of woolen and cotton goods, paints, and many necessary articles, and in a few years Philadelphia had become the leading manufacturing city in America.

The adoption of the Federal Constitution by the required number of States, and the inauguration of a permanent and efficient government, put an end to the conflicting and restricting legislation of separate States, and gave to manufacturers a wider scope, better guardianship, and conferred upon them the power and right of protection.

Pennsylvania was deeply interested and by the time our Constitution of 1790 went into effect hosiery, woolens, cotton goods, coarse linens, hats, gloves, and many other articles were being made here. President Washington used to point with pride to the Pennsylvania fabrics worn by his wife. The worsted hosiery made in Germantown, Lancaster, Bethlehem and Reading undersold those of the same fabrics made in England.

John Dorsey began the manufacture of oil cloth in Philadelphia in 1807. Michael Washington, of Lancaster, won a gold medal, in 1774, for producing the best piece

of woolen cloth. John Biddle manufactured white lead in Philadelphia, in 1783, and James Sutter manufactured glue in Southwark.

The first patent in the United States was awarded March 11, 1791, to Samuel Mulliken, of Philadelphia, for a machine for threshing grain and corn. On December 31, following, William Pollard, also of Philadelphia, patented a machine for spinning cotton by waterpower. By the year 1800 there were manufactories of every sort and kind in Philadelphia and throughout the entire Commonwealth, and many of the important inventions had already been made for which in the years since Pennsylvania has ever maintained the most enviable position among the States of the Union.

Governor Simon Snyder, in his message to the General Assembly in December, 1809, congratulated the members upon the progress of improvement during the year. The development of the country, as shown in the building of barns, houses, bridges, and the construction of turnpikes gave cheering evidence of prosperity. "Our mills and furnaces are greatly multiplied. New beds of ore have been discovered. We have lately established in Philadelphia large shot manufactories, floor cloth manufactories, and a queensware pottery on an extensive scale. These are all in successful operation, independent of immense quantities of cotton and wool, flax, hemp, leather, and iron, which are carefully manufactured in our State, and which save to our country the annual expenditure of millions of dollars."

From 1820 to 1840 was known as the era of internal improvements in the United States. This was the period of canal building, steamboat construction, and grading of horsepower railroads.

September 30, 1832, the anti-tariff or free trade convention met in Philadelphia. It adopted a series of resolutions expressing attachment to the Constitution, but declaring that the tariff laws of 1828 were a violation of that instrument. An address to the people of the United States and a memorial to Congress, prepared by Albert Gallatin, were adopted.

The tariff convention met in New York, October 26, when the 500 delegates elected William Wilkins, of Pittsburgh, president, and Hezekiah Nile, of Baltimore, a native of Chester County, Pennsylvania, as secretary. This convention affirmed the constitutionality of the tariff for protection, and memorialized Congress to continue the protection of domestic industry. This convention divided the country on the question of protecting duties.

This was the era when Pennsylvania became populated by the lumber jacks. Williamsport and Lock Haven became known as lumber towns. The "Big Water Mill" was the first sawmill at Williamsport, erected in 1839, and the place soon became the "Lumber City." English, Welsh, Scotch, and Irish came to work in our anthracite mines. Scranton, Wilkes-Barre and Pottsville became justly famous through that industry. This period was followed by the building of railroads, so soon to be retarded by the great War of the Rebellion.

Centennial Exposition of 1876—The Centennial Exposition of 1876 was a national and international exhibition, yet its location in Philadelphia, though primarily because it was in that city one hundred years before that the States were “declared free and independent,” there was also a fitness in other respects in the location selected. Here were the greatest variety and perfection of industries, and it was by that time certainly the industrial capital of America. It was second in the world, only London exceeded it in manufacturing. More than \$100,000,000 was invested in manufactures, and 150,000 workmen were employed, producing goods valued at \$200,000,000 annually. There were 2,366 exhibits made by Philadelphians, which were distributed as follows: mines and metallurgy, 87; manufactures, 710; education and science, 203; art, 218; machinery, 400; agriculture, 677; horticulture, 71. These exhibitors received 1,049 awards.

Pennsylvania Leads in Manufacturing—Two and a half centuries have passed away, and we witness 336 separate and distinct industries in operation in the United States as shown by the Federal Census Bureau. Of these 336 there are 311 kinds in actual operation in Pennsylvania. In all the other forty-seven States of the Union there are only to be found twenty-five industries that are not being carried on in Pennsylvania. Of these 311 industries there are forty-two in which Pennsylvania leads all other States, forty-four in which she is second, and 114 others in which it stands third, fourth, or fifth; so that there are only 111 industries in operation in Pennsylvania in which we hold a lower position than fifth from the top in production.

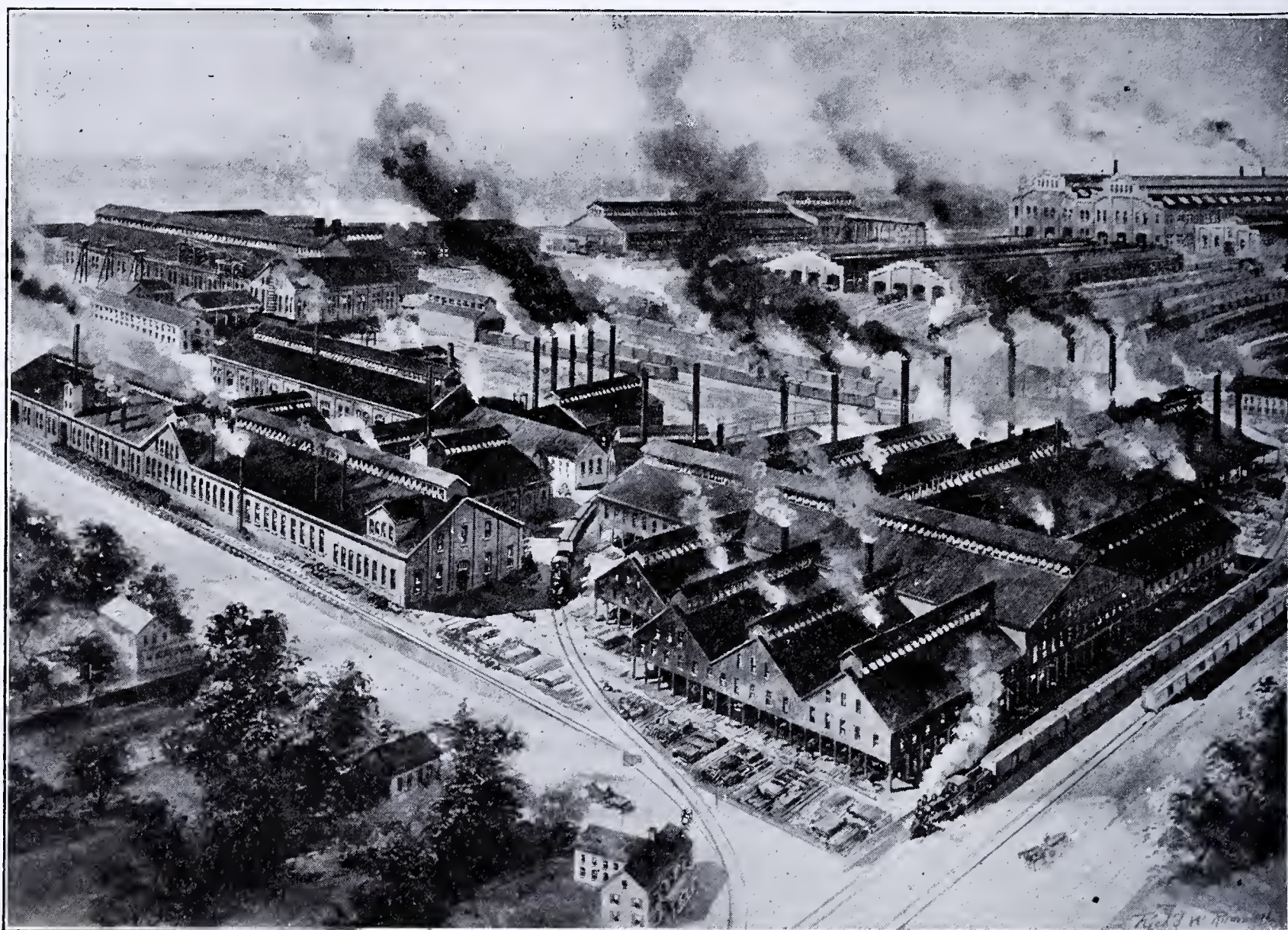
In 1928 the total value of Pennsylvania manufactured products was \$6,660,466,500. The total wages and salaries amounted to \$1,589,421,700. If the added value of products through processing was \$3,000,000,000, more than one-half of the enhancement went to the men and women who carried on the job of manufacturing and distributing. Metal industries, with 45.41 per cent. of the products in value, paid 45.64 per cent. of the wages; textiles, showing 18.20 per cent. of the production, paid 19.77 per cent. of the wages; food, with 9.48 of the production, paid 6.54 per cent. of the wages; paper and printing, with 5.87 per cent. of the production, paid 7.26 per cent. of the wages.

The twenty-five ranking Pennsylvania industries in order of value added by manufacture are: Iron and steel works and rolling mills; foundry and machine shop products; electrical machinery, apparatus and supplies; printing and publishing newspapers and periodicals; silk; knit goods; car and railroad repair work; baking; cigars and cigarettes; clothing for men and boys, except working clothes; glass; cement; book and job printing; clay products other than pottery, including non-clay refractories; structural and ornamental steel and iron not made in rolling mills; cotton goods; petroleum refining; iron and steel blast furnaces; furniture, including store and office fixtures; paper; leather; clothing for women, exclusive

of corsets and garments made in knitting mills; motor vehicles, bodies and parts; gas, manufactured; dyeing and finishing textiles.

The fifteen leading cities for capital invested in industry and value of products are the following: Philadelphia, Pittsburgh, Johnstown, Erie, Bethlehem, Reading, Lancaster, York, Allentown, Chester, Easton, Pottstown, Conshohocken, Norristown, and Phoenixville.

In a list of fifty-one representative major industries, based on the value added by manufacturing, Pennsylvania is ranked first in seventeen, second in nine, third in six, fourth in fifteen, and fifth in four. By the same census there were forty-two manufacturing industries in which Pennsylvania led all other States in the

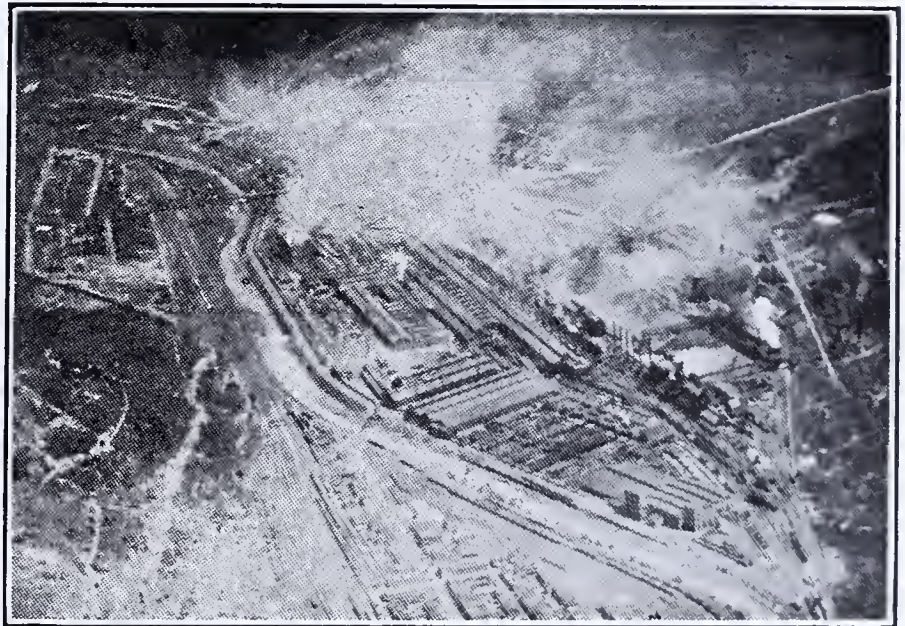


Largest Car Building Plant in United States (Berwick)

total value of products. These are: (1) Artificial limbs. (2) Artists' and draftsmen's materials. (3) Asbestos products other than steam packing or boiler covering. (4) Belting other than leather or rubber, made from purchased fabric. (5) Wooden cigar boxes. (6) Cars and railroad repairs. (7) Cardboard not made in paper mills. (8) Rag carpet and rugs. (9) Cement. (10) Chocolate and cocoa products, not including confectionery. (11) Clay products (other than pottery), and non-clay refractories. (12) Coke, not including gas house coke. (13) Com-

pressed and liquified gases. (14) Crucibles. (15) Files. (16) Flags and banners. (17) Galvanizing and other coating not done in rolling mills. (18) Glass. (19) Glue and gelatine. (20) Hair cloth. (21) Hats and wool felt. (22) Ice cream. (23) Iron and steel blast furnaces. (24) Iron and steel works and rolling mills. (25) Jute goods. (26) Knit goods. (27) Lace goods. (28) Leather, tanned, curried and finished. (29) Lubricating greases not made in petroleum refineries. (30) Metal working machinery other than machine tools. (31) Minerals and earths ground or otherwise treated. (32) Plumbers' supplies, not including pipe or vitreous china sanitary ware. (33) Silk manufactures. (34) Smelting and refining zinc. (35) Springs, steel, railway, heavy machine and vehicle, not made in rolling mills. (36) Structural ornamental iron and steel not made in rolling mills. (37) Steel barrels, kegs and drums. (38) Sulphuric, nitric and mixed acids. (39) Upholstering materials not elsewhere classified. (40) Waste. (41) Wirework, not elsewhere classified. (42) Wool pulling.

Pennsylvania Supplies Most Materials—The importance of this record is shown in the recent survey made in New York City. When a new skyscraper was about completed, it was a matter of interest to ascertain the source of the materials of which it is composed. They expected, they said, to find that Pennsylvania would lead the States, but they did not expect to find, as they did, that Pennsylvania led all the other States put together, supplying sixty per cent. of everything used in the construction. The cement used in the foundations, walls and floors, the steel for reinforcing and for the great beams, the wrought iron pipe, the hundreds of thousands of yards of metal lath, the acres of plate glass, the black granite for the base of the buildings, all came from the works and quarries of Pennsylvania. In addition the white brick used to face it came from Ohio, and the metal window frames from Wheeling, just on the edge of the Pittsburgh district. It is truly an impressive demonstration that Pennsylvania is still the workshop of the world.

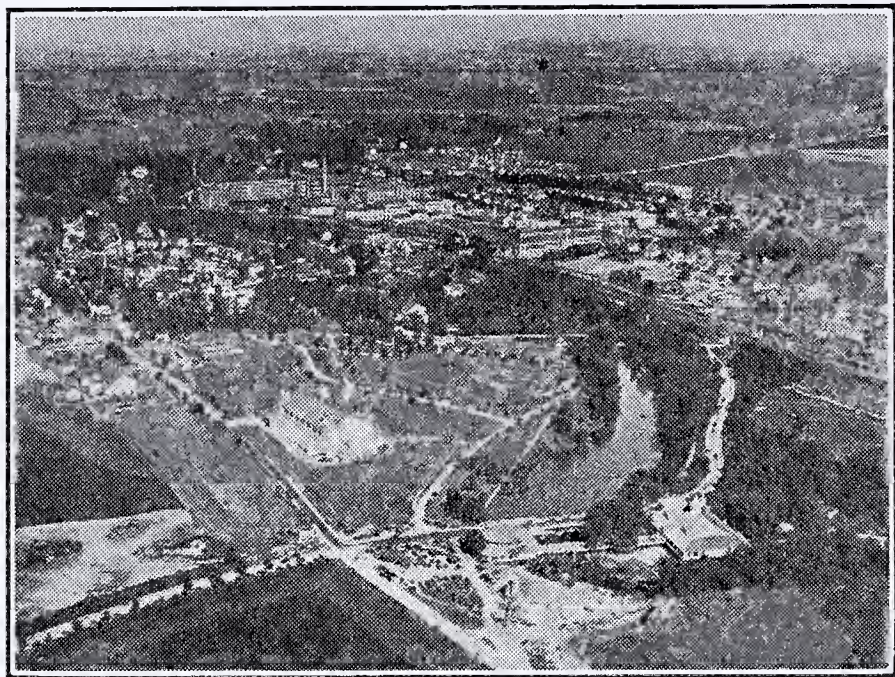


Bethlehem Steel Company, Johnstown. Franklin Works

Early Mills—The industrial development of Pennsylvania had its origin in efforts to supply the people of the Province with the simplest necessities of life. A grainmill was built by Johan Printz, Governor of New Sweden, on Cobb's Creek, in 1643, and was the first mill built in Pennsylvania. The Roberts Mill was built

in Germantown about 1683 and was the first gristmill; another was built for William Penn and some associates at Chester in 1699; Thomas Parsons built a mill at Frankford in 1695; the "Governor's Mill" was built for Penn in the Northern Liberties about 1701. Flour mills and sawmills seem to have been the earliest industries.

Oliver Evans greatly improved the machinery for grinding grain. His invention was opposed at first by the millers along Brandywine Creek; indeed, they hesi-



**World's Largest Chocolate Works, Hershey,
Pennsylvania**

tated about being willing to test it. Albert S. Bolles says that finally a Friend made the following proposition: "Oliver, we have had a meeting, and agreed that if thee would furnish all the materials, and thy own boarding, and come thyself and set up the machinery in one of our mills, thee may come and try, and if it answers a valuable purpose, we will pay thy bill, but if it does not answer, thee must take it out again and leave the mill just as thee found it, at thy own expense." Sure of success, Evans

accepted the terms, and the merits of his inventions were acknowledged.

Soon the exportation of flour began, especially to the West Indies, and the Assembly regulated the traffic by prescribing the size of the casks and quantity they should hold, their storage, and the kind of punishment to be administered to those who should mix any improper, unwholesome ingredient in flour. Brand marks were required and the wagons carrying flour were to be covered.

Next to the grainmills, the sawmill was of the highest importance. They were needed to prepare lumber for their buildings. This was done by hand sawyers at first, and sawmills did not come into popularity until about 1730. These were established along the rivers and large streams. Boards, planks, staves, heading and shingles were made in large quantities.

The brewing and distilling business began early, and were regulated by law. One of the first of Penn's laws was against drunkenness. The price of beer and ale was also fixed by law. An excise on liquors imposed by the law of 1720 was attended with great difficulty, and additional legislation was required to prevent an evasion of the law.

William Penn was desirous that the grape should be cultivated and made into wine. He employed a Frenchman, skilled in the art of wine dressing, to cultivate his own vineyard at Pennsburg in Bucks County.

Textiles—The majority of the settlers of Germantown were weavers, and for a century thereafter Germantown stockings held a place in the markets. In 1825 Thomas Fisher induced these knitters to bring their machines into one building. Each operator worked for himself, but the product was sold by one agent. This was the first knitting mill in America.

Weavers wove the linen into coverlets, and receiving rags cut into strips and sewn into lengths and rolled in balls, made them into carpets.

No cotton was then available. Clothing had to be made from linen, wool, or leather. A popular mixture of linen and wool was called linsey-woolsey.

Germantown was also the earliest place in which silk was made.

William Penn provided for the culture of mulberry trees in order to raise silk worms. This industry, however, died away. But about 1880 the silk industry began in earnest in Pennsylvania.

Today the manufacture of textiles in Pennsylvania, while not comparable with New England, is carried on extensively and ranks next to the production of iron and steel. There are more plants for making cotton lace than in any other State. Scranton, Wilkes-Barre and Columbia lead in this field.

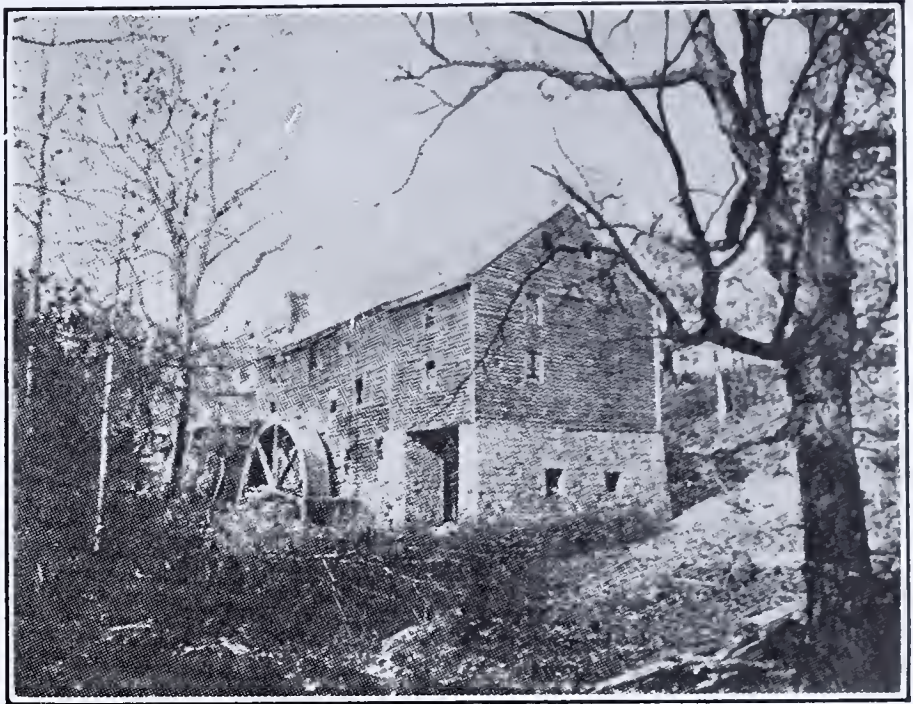
The Germans were noted for their linen and hosiery. When Penn offered a premium for the first piece, it was earned by Abraham Opdengrafe, in September, 1686. The Germantown linen was declared to be "such as no person of quality need be ashamed to wear." Special attention was given to the cultivation of flax and hemp. Flaxseed was an important export from Pennsylvania.

Very little linen is made, but the manufacture of silk makes Pennsylvania one of the leading States. In more than two hundred towns are found silkmills. Philadelphia, Scranton, Wilkes-Barre, Allentown, Easton, Lewistown are leading places in the production of this fabric.

Textiles to the value of nearly \$200,000,000 are annually produced in Philadelphia, one of the world's greatest textile centers. There are nearly 250 textile establishments in that city, with about 28,000 workers, earning \$36,000,000 a year.

In the manufacture of wool Pennsylvania is preëminent, ranking second in the Union in woolens, worsteds, and knit goods. There is more wool in Washington County than in any other county east of the Mississippi River.

When Congress returned to Philadelphia, in 1790, William Sprague, of that city, produced a handmade tufted carpet, adorned with patriotic emblems, to cover



Washington's Mill, Near Uniontown

the floor of the Senate chamber. So pleased were the members that a tariff or tax was imposed upon manufactured carpets to encourage their manufacture in America. Philadelphia now produces almost one-half of the entire American carpet production.

Artificial Silk—Along with the manufacture of silk, that of making artificial silk has increased at an amazing rate, and is now a most important part of the textile industry. This artificial silk, known as “rayon” or “viscose,” is made from cellulose squirted into threads which are treated so that they give the lustre of true silk.

Carpets and Rugs—William Caverley, of Philadelphia, made the first carpets in America, in 1775, and today more carpets and rugs are made in and about Philadelphia than are made in all of Great Britain. Carpet weaving in Pennsylvania far exceeds that in any other State.

Hats—Felt-making was an important early industry and in 1704 the felt-makers of Pennsylvania petitioned the Assembly to prohibit the exportation of beaver and other furs. Philadelphia has been a hat making center since the earliest days of its existence. The furs of many animals, especially the beaver, made the most popular hats for many years.

In 1865 John Batterson Stetson, a New Jersey hat maker, came to Philadelphia, where, with no capital but an abundant fund of energy and self reliance, he opened his first store. He made most of his hats with his own hands, but soon began the manufacture for the local trade. His business grew. By his means the cowboys of the “wild and wooly West” preferred Stetson “sombros” to all others, and a large trade in Philadelphia hats was built up in Europe. This industry has become the largest hat enterprise in the world. The benefactions of the late Mr. Stetson gave him rank among the leading philanthropists of America.

Furs—Industrial Pennsylvania will never attempt to rival the Hudson Bay country as a fur producer, or seriously question that a fair number of sister States excel in trapping the silky coated mammals. But the record recently disclosed by the Game Commission that \$2,099,764 in fur values were taken in the season of 1927 to 1928 entitles the Commonwealth to more than passing consideration in the pelt world. In a recent year the total output of establishments of the country in the dressed fur industry was \$25,422,000; the Pennsylvania contribution would thus be a fair proportion of the general sum, which places Pennsylvania in a new light for the diversity of its interests.

Leather—The manufacture of leather is one of the oldest and remains one of the greatest of Pennsylvania industries. The earliest settlers gave much attention to this industry, partly because agriculture and cattle raising were the chief occupations, and partly because of the abundance of oak, hemlock, and other trees

which would yield tannic acid. Leather is another industry in which Pennsylvania takes a lead among the States as undisputed as her lead in iron and steel.

Shoes, breeches, belts, saddle-bags, saddles, and harness demanded much leather. Fortunately, hides and skins were abundant. The Swedes were well supplied by the Swedish West India Company with meat cattle from their native country, and made their own leather shoes, and the Dutch probably had tanneries. Like the Indians, these early settlers wore dressed skins. The women, too, wore jerkins and petticoats of the same material, and their beds even, except the sheets, were composed of the spoils of the chase.

The Indians had a mode of dressing leather whereby it became very soft and the early colonists made good use of it. Leather stockings or overalls were charged in the accounts of William Penn. In 1721 the Assembly passed an act relating to the tanning and currying of leather. Pennsylvania supplied New York and other colonies with shoes and leather.

Indians furnished large quantities of prepared skins of wild animals. One of the most noted hunters was Logan, the Mingo chief, who hunted in the Juniata region and sold his skins, dressed by his own hands, to the white people. There were many other celebrated hunters, both Indians and whites, whose exploits have come down to the present generation.

In the early part of the nineteenth century the manufacture of leather, especially the heavier and coarser forms, became one of the leading Pennsylvania industries, supplying not only its own wants for leather but furnishing large quantities of leather and leather products to other States and considerable quantities for exportation to foreign countries.

Pennsylvania has never been able to compete with New England in the manufacture of boots and shoes, but because of the abundant supply of hemlock bark the tanners of Pennsylvania began in the last century to import foreign hides, and manufactured morocco leather, made from goat skins tanned with sumac leaves. Many hides thus tanned in Pennsylvania are again shipped to markets outside of the State.

At the beginning of the twentieth century there were in the United States 1306 establishments engaged in the manufacture of leather, of which 254 were found in Pennsylvania, and of the total capital invested in this business one-third was in the plants of our own State, and one-fourth of the total number of employees were engaged in our plants, and they turned out in excess of one-fourth of the nation's total output of leather and its products.

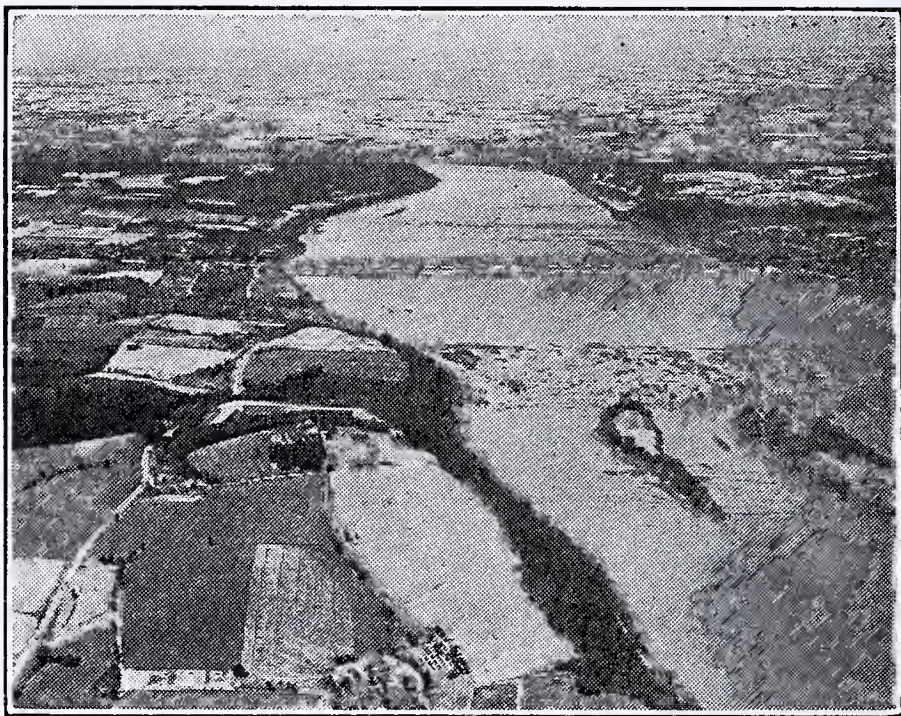
Of some 53,000 leather workers in the United States almost 9000 are normally employed in the 250 leather establishments in Pennsylvania. This takes no count of the 21,000 workers engaged in manufacturing boots and shoes, and boot and shoe stock, luggage, gloves, and leather findings, for all of which Pennsylvania, and particularly Philadelphia, are noted.

The national leather output is nearly \$500,000,000 a year. Pennsylvania produces nearly one-fifth of this amount.

Bridges—The first chain suspension bridge in America was built in 1801 by James Finley, associate judge of Fayette County, across Jacob's Creek, which forms a part of the boundary between Fayette and Westmoreland counties. This was not, however, the first chain bridge in the world as they were used in China at an early date. Judge Finley secured a patent for his bridge in 1808, and others were erected on his plans. One of these was at the Falls of the Schuylkill, about Philadelphia, others at Cumberland, Maryland, Georgetown, Maryland, Brandywine, Delaware, and Brownsville, in Massachusetts, Neshaning, Easton, and Lehigh Gap in Pennsylvania. This last named bridge erected in 1811 has been replaced by a steel and concrete structure within the past several years.

The iron suspension bridges are of more modern origin and are in more general use. A small iron suspension bridge was built over the Schuylkill at Philadelphia in 1816 by White and Hazard with iron made at their own wire works at the Falls of the Schuylkill. The total cost was \$125. The span was 408 feet, and the passageway was but eighteen inches wide. Only eight persons were allowed to cross the structure at one time.

One hundred and ten years later Philadelphia took a large part in giving to the world what was at the time its largest wire cable suspension bridge. In contrast



Wrightsville-Columbia Bridge

with the original suspension bridge, the new Delaware River bridge had a span of 1750 feet; the eighteen-inch passage grew to 125 feet, which accommodates 6000 automobiles an hour, four lines of rail traffic, and two ten-foot streams of pedestrians. The cost was about \$35,000,000. Whereas the first bridge fell under a weight of snow, it is impossible to load the new bridge with sufficient weight to snap its cable.

It is interesting to note that wire fences were in use in the neighborhood of Philadelphia at this early date. The wire was manufactured by this same company. Charles Ellet, Jr., a distinguished engineer, born at Penn's Manor, Bucks County, in 1810, is credited with the introduction in America of wire bridges of general utility. In 1842 he built a wire cable suspension bridge over the Schuylkill at Fairmount, the first noteworthy bridge of this kind ever built. He shares with Roebling the honor of being a pioneer of wire suspension bridges. The wire suspension bridge as we see it today is the work of Pennsylvania engineers.

The little boro of Saxonburg, in Butler County, which boasts of 319 inhabitants, is all that now remains of an ambitious German colony, which, in 1831, under the leadership of Johann A. and Karl Roebling, of Muhlhausen, in Old Saxony, bought 7000 acres of land in Jefferson Township, and planted a thriving community.

The story of this colony is interesting. It was here that John A. Roebling began his active life in which he attained a world-wide eminence as a civil engineer; an inventor and manufacturer of wire rope and machinery for its use, and became the greatest builder of suspension bridges.

John A. Roebling was born in Muhlhausen, Prussia, June 12, 1806. He graduated at the Royal University in Berlin in 1826, his thesis being on suspension bridges. After spending the three years required by law in the government service, he sailed for America, on May 23, 1831, and landed in Philadelphia, where for a few weeks, he and his brother Karl studied the English language and determined where they would settle.

They started for Pittsburgh, via Pennsylvania Canal and Karl was taken ill, which circumstances influenced the selection of Butler County as their destination.

Land was purchased and the village of Saxonburg was laid out in true German style. Then the Roebling brothers wrote to their friends in and about Muhlhausen, extolling the virtues of the place. Early in 1832 three hundred families embarked at Bremen; but because of the pernicious activities of colonizing agents at Philadelphia and Baltimore, only a few families found their way to Saxonburg, others went to New Harmony, Indiana, and the remainder scattered.

The Roeblings devoted themselves to agricultural pursuits but this proved monotonous to one who was educated as an engineer. Extensive canal and slack-water improvements were then in progress and John obtained his first employment in America on the navigation of Beaver River, this was followed by an engineering position on the Sandy and Beaver Canal; then on the feeder of the Pennsylvania Canal on the Allegheny River.

Entering the service of the State of Pennsylvania, he surveyed and located three lines of railway across the Allegheny Mountains, from Harrisburg to Pittsburgh.

While making these surveys Mr. Roebling became acquainted with the operation of the Portage Railroad with its many inclined planes, and he invented a wire rope to replace the heavy four inch hempen haulage cables. He also altered the machinery to enable the use of smaller rope. This was the pioneer wire rope business in America, and in which the Roebling factory still occupies first place.

In 1844 Mr. Roebling took a contract to build a suspension aqueduct across the Allegheny River at Pittsburgh. This consisted of a wooden trunk supported on each side by a continuous wire cable seven inches in diameter. In spite of ridicule, he completed his bridge, consisting of seven spans, each of 162 feet. It was the first such bridge ever built.

In 1846 he built a suspension bridge over the Monongahela River at Pittsburgh. He built four similar works on the line of the Delaware and Hudson Canal. In 1851 he began the construction of the suspension bridge across Niagara River; he next built the wire cable bridge over the Allegheny River at Pittsburgh, then one over the Ohio at Cincinnati.

In 1868 he was chosen to build the Brooklyn Bridge, and after preparing plans and specifications, he was directing some operation when an accident occurred which caused his death in Brooklyn, July 22, 1869. The great Brooklyn Bridge was completed by his son, Washington A. Roebling, who was born in Saxonburg, May 26, 1837. A memorial tablet in Saxonburg, Butler County, bears the following inscription:

"This tablet is dedicated to the names of John Augustus Roebling, founder of Saxonburg, inventor of wire rope, designer of the Brooklyn Bridge, who lived here, 1831-1849. Washington A. Roebling, engineer of the Brooklyn Bridge, born here in 1837."

Pennsylvania bridges span most of the rivers of the earth. Pennsylvania locomotives run over Pennsylvania rails in the Occident and Orient alike, across Arctic waters and through tropical jungles, through the heart of civilization, and on the border of savage-land.

Nearly all the structural steel used in bridges and buildings comes from Pennsylvania.

Railroad Tunnels—The first railroad tunnel in the United States was dug four miles east of Johnstown, Pennsylvania, and completed in 1833. It formed part of the Pennsylvania Works, was on the Portage Railroad, and was first used November 26, 1833.

Ship Building—The first sea-going vessel built in Pennsylvania was the "Amity," built by William Penn at Philadelphia in 1683 for the Free Society of Traders. In the same year Penn wrote: "Some vessels have been built here and many boats." Next to the Clyde in Scotland, the Delaware River is the greatest ship-building center in the world. One-fifth of the shipping in the United States originates in Pennsylvania.

Through the Provincial period raft ships containing as many as eight hundred logs each were sent to England.

In 1769 twenty-two vessels were built in Philadelphia. During the Revolutionary War a Continental and a State navy were established on the Delaware River, and when Congress established the navy department, in 1798, the first navy yard was located there. Many ships, river craft, and steamboats have been built at Pittsburgh. After the struggle for independence a trade with China arose, and the "Canton," a ship of 250 tons burden, was built in Philadelphia. In 1850 there were four lines of vessels running between that city and Liverpool. The "Arctic," which Dr. Elisha Kent Kane took upon his expedition to the

North Pole, was built in Philadelphia. Many of the mightiest vessels of the United States Navy had been constructed there. John Roach and Sons, at Chester, and William Cramp and Sons, at Philadelphia, gave a great impetus to American ship building. The extensive construction of wooden craft was discontinued about the time of the War of the Rebellion.

Fire Engines—The first fire-fighting company in Pennsylvania was organized by Benjamin Franklin in Philadelphia, December 7, 1736, and fire engines have been used in that city since December, 1748, when the city council purchased of Abraham Bickley a fire engine he had imported from England for £50. This engine was then in Bethlehem and was the first one purchased by the city of Philadelphia. As late as 1777 only six fire engines comprised the entire force in the city.

Richard Mason, in 1768, manufactured engines which were operated by levers at the ends instead of the sides of the engines. These were in successful operation until 1801. One of the earliest builders of fire fighting apparatus in America was a genius named Patrick Lyon, who lived in Philadelphia, where he gained both a reputation and a fortune as a locksmith and blacksmith. In 1794 Lyon became the greatest builder of fire engines in the country, when he invented an engine which would throw more water and with a greater force than any yet in existence. He built fire engines as late as 1824. The "Reliance" and "Old Diligent," built by him, performed useful service in Philadelphia until the introduction of steam fire engines in 1855. In 1804 Lyon built the first hose carriage used in Pennsylvania. It is nothing more than a box on wheels, carrying 800 feet of hose carefully coiled in layers. It is of interest to note that several of the oldest fire companies in Pennsylvania possess fire engines built by Pat Lyon and carry them in parades during the special celebrations.

Ignition Engines—Dr. Alfred Drake, of Philadelphia, showed an "ignition-engine" at a fair in Crystal Palace, New York, in the fall of 1855. He advocated its use for locomotive work. In the early 'seventies George W. Brayton, of Philadelphia, built internal combustion engines for many uses. Two were shown at the Centennial, one of them pumping air for the aquariums. In 1876 he licensed Joshua Rose to apply Brayton engines to road vehicles, and Rose sublicensed A. R. Shattuck, of New York. It was from Brayton that Selden got his ideas for his famous patent for the first Selden car. Charles E. Duryea, of Reading, began construction in 1891, and he won the first American automobile contest in 1895. There were eighty entries, but because of deep snow only six started. These were foreign gas cars—Europe's best. Duryea cars won the second contest in 1896, and also won the first contest in England the same year.

CHAPTER VI.

PENNSYLVANIA IN SCIENCE.

William Penn's influence is best shown in the types of people he attracted to settle in his Province. They were practical, ambitious, industrious, and best of all intellectual to an unusual degree. Pennsylvania has been the home of many distinguished scientists who are known to the world at large. Their originality and accomplishments are reflected in their initiatives in art, literature, and music, and in a greater degree in the more practical sphere of science.

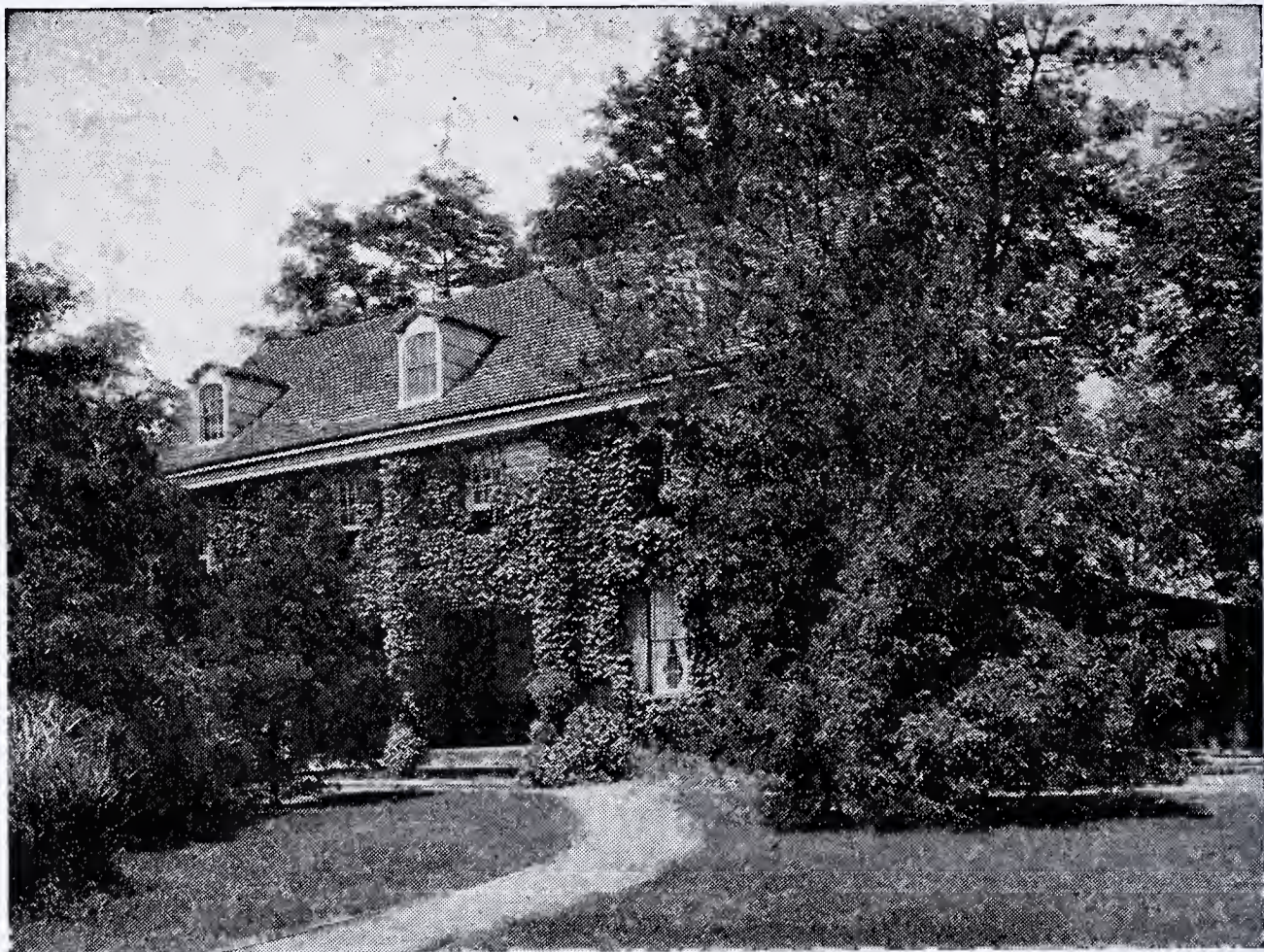
The Quakers and German sects looked upon art, music, and amusements as frivolous and worldly, their emotions found an outlet in philanthropy and their mental activities turned toward practical affairs and science. Naturally, botany, which concerned trees, plants, and flowers growing about them, were the earliest to attract their attention, and John Bartram established the first botanical garden in America; Thomas Godfrey, the glazier, invented the quadrant; Benjamin Franklin first drew lightning from the heavens and made other valuable contributions to science; David Rittenhouse, the self-taught mathematician and scientist, first accurately measured the distance to the sun, and he was the first to discover that the planet Venus had an atmosphere; the first electric furnace was built by Dr. Robert Hare, who also invented the oxygen blow-pipe; Dr. Joseph Priestley, the celebrated theologian and scientist, and discoverer of oxygen, when driven from his native England, lived the latter years of his life in Northumberland, Pennsylvania, where he discovered other gases and published many books; John James Audubon and Alexander Wilson were the first great American ornithologists; Thomas Say was America's most remarkable entomologist; Richard Harlan was the first eminent zoölogist; Daniel G. Brinton the most distinguished ethnologist, and Edward Drinker Cope the most advanced paleontologist; Oliver Evans made the first high pressure steam engine, and the first machine which moved over land with its own power; John Fitch and Robert Fulton gave us the first successful steamboats; Matthias Baldwin and Phineas Davis developed the American locomotive; the Roeblings erected the first and best wire suspension bridges in the world; the first daguerreotype made in America was the accomplishment of Joseph Saxton; Sunbury is the first town in the world to be lighted by electricity, and there Thomas A. Edison perfected his first commercial lighting plant.

The first American Arctic expedition was fitted out by Philadelphia merchants in 1753. Among the intrepid scientists and explorers who sailed the uncharted seas of ice are Dr. Isaac I. Hayes, Elisha Kent Kane, Thomas Janvier, Henry Grier Bryant, and Robert E. Peary. To the latter it was given the honor of his

eighth expedition to locate the exact position of the North Pole; every one of these explorers was a Pennsylvanian.

The American Philosophical Society, founded by Benjamin Franklin, May 25, 1743, was the earliest American institution devoted to science. The Academy of Natural Sciences, the first in America, was founded in Philadelphia, January 25, 1812. The Pennsylvania Horticultural Society, organized in 1827, is the first of its kind on this continent.

Botany—It is not generally known, at least outside of Pennsylvania, that here was the birthplace of a man whom the celebrated Linnaeus pronounced the greatest natural botanist in the world. This man was John Bartram, born in Del-



Home of John Bartram

aware County, March 23, 1699. He established a botanical garden—the first ever attempted on this side of the Atlantic—at Gray's Ferry, in 1728. Here he pursued his studious habits, his reputation spreading abroad until correspondence was solicited by the leading botanists of the Old World, while in the colonies, all scientific men in the same line of study sought his favor, advice, and opinions. Dr. Benjamin Franklin was his earnest friend, and constantly urged Bartram to authorship. James Logan, however, was probably the first person who directed the mind of Bartram seriously to botany as the pursuit of a lifetime. Logan, in 1729, sent to England for a copy of "Parkinson's Herbal," saying he wanted to present it to John Bartram, who was a person worthier of a heavier purse than fortune had yet allowed him, and had "a genius perfectly well turned for botany."

A subscription was started in 1742 to enable Bartram to travel in search of botanical specimens, many of which were sent to Europe, where they attracted Kahn and many other naturalists to this country. The result of these travels was



Inscription Over Front Window in Bartram's Home

the publication of two very delightful books by this earliest of American botanists. His fame had so extended that in 1765 King George III appointed him botanist to the King.

On the outside of his house, over the front window of his study, was a stone with the inscription, carved by his own hand:

"It is God alone, Almyty Lord,
The Holy One, by me Adord.
John Bartram, 1770";

and an inscription over the door of his greenhouse was:

"Slave to no sect, who takes no private road,
But looks through nature up to Nature's God."

As the British soldiers were approaching Philadelphia from the battle of Brandywine, John Bartram greatly feared they would destroy his "beloved garden," the work of a lifetime. He became very much excited, and said, "I want to die!" and expired half an hour later, September 22, 1777. His remains lie buried in the Friends' burying ground, Darby.

He transmitted both his talents and tastes to his son William, and their joint labors during a period of nearly one hundred years were the most valuable con-

tributions that this country has made to the science in whose behalf they were devoted.

His son William went to Florida to study and collect botanical specimens, returning home in 1771. In 1773, at the instance of the distinguished Quaker physician, Dr. John Fothergill, of London, he spent five years in the study of the natural productions of the Southern States, the results of which investigations were published by Dr. Fothergill. Bartram also prepared the most complete table of American Ornithology prior to Wilson's great work, and he was an assistant of the latter in a portion of his work. He died suddenly, July 22, 1823, just a moment after he had completed writing a sketch of a new specimen of a plant.

Humphrey Marshall, born at Marshallton, Chester County, October 10, 1722, of Quaker ancestry, was a stonemason in early business life, and devoted much time to astronomy and built a small observatory and natural history laboratory, but influenced by the vicinage, friendship, and example of Bartram, took up the study of trees, and began the systematic collection of plants, and ere long was in correspondence with the leading men of Europe in that line of investigation. In 1773 he established the Marshallton Botanical Garden. In 1785 he published his "Arboretum Americanum, or Description of American Trees," which has been called the first truly indigenous botanical essay published in the Western Hemisphere. He died November 5, 1801.

Reverend Gotthief Henry Ernest Muhlenberg, born at Trappe, Montgomery County, November 17, 1753, devoted much of his leisure time to the natural sciences, particularly to botany, and wrote much upon the subject, his catalogue of plants of North America was published at Lancaster in 1813. He acquired a world-wide reputation as a botanist. Dr. Benjamin S. Barton, born in Lancaster, February 10, 1766, and his nephew, Dr. William Paul Crillon Barton, born in Philadelphia, November 17, 1786, were both botanists of note, and the latter published in 1818, "Flora of North America." William Darlington, born in Chester County, in 1782, was an eminent botanist, and, in 1826, published "Florula Cestrica." A rare pitcher-plant discovered in California bears his name, "Darlingtonia Californica."

Thomas Meehan came to Philadelphia from his native England in 1848, and took charge of the Bartram Gardens. In 1854 he established the Germantown Nurseries, which he conducted until his death in 1901. He edited "Gardener's Monthly," 1859-89. Was senior vice-president of Philadelphia Academy of Natural Sciences for twenty-three years; was a co-worker with Darwin in the doctrine of evolution; the State Botanist of Pennsylvania from the creation of that office until his death. In 1873 he began the publication of "Native Flowers and Ferns of the United States," which he continued with "Meehan's Monthly," which he founded in 1891.

Ellwood Cooper, born in Lancaster County, May 24, 1829, was an eminent horticulturist, who went to California in 1870 and devoted himself to fruit cul-

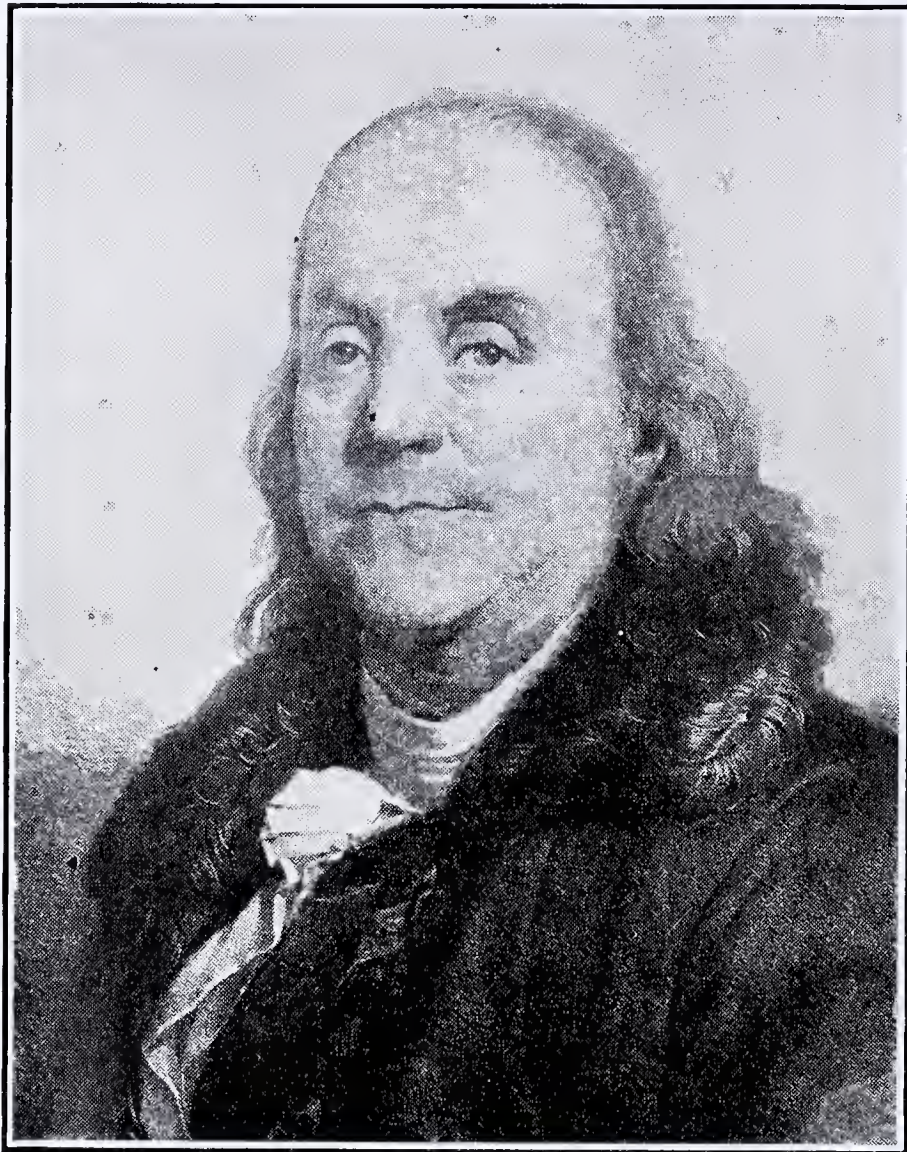
ture. He was the first manufacturer of olive oil in the United States; also the inventor of machinery for hulling and pitting almonds and English walnuts. President of Santa Barbara College three years; president of State Board of Horticulture, 1885-1903. William Marriott Canby, born in Philadelphia, 1831, was an eminent botanist, whose collection of more than 30,000 herbarium specimens is now owned by New York College of Pharmacy. He was one of the botanists attached to the Northern Pacific Transcontinental Survey. Otto Emery Jennings, of the botanical faculty of University of Pittsburgh since 1904, and curator of botany in the Carnegie Museum since 1915, has had a distinguished career. Editor of "Byrologist," since 1913, and author "Manual of Mosses of Western Pennsylvania"; also various scientific articles in "Annals," Carnegie Museum, and various periodicals. Chester A. Darling, professor of biology in Allegheny College since 1913, is the author of important works, among which are "Handbook of the Wild and Cultivated Flowering Plants," in 1912; "Spring Flowers," in 1913, etc. Dr. Ernest M. Gress is the present efficient chief botanist in the Department of Agriculture.

The Philadelphia Horticultural Society was organized December 21, 1827, pursuant to a call signed by James Mease, N. Chapman, George Pepper, John Vaughan, Reuben Haines, Joseph Hopkinson, Charles Chauncey, Horace Binney and Matthew Carey. The initial meeting was held in Franklin Institute November 24, 1827, with Mr. Carey, as chairman, and Dr. Mease, secretary. The actual work of organization was placed in charge of a committee composed of D. Maupay, D. Landreth, Jr., T. Hibberd, T. Landreth, John McArran, and D. D'Arras, all practical gardeners and florists. The first autumnal exhibition of fruits and flowers was held June 6, 1829. This was the first institution of its kind in America.

Electricity—Great as was Benjamin Franklin as a writer, statesman, diplomat and man of practical affairs, he also won a high reputation as a scientist. His **eminence in this field** rested on his electrical discoveries, and some of them established important truths and principles for the first time upon solid foundations. These made him known in Europe, as well as in America, and were largely the source of his prestige in his service of the colonies abroad.

In a letter of Franklin's dated July, 1747, is found his theory of positive and negative electricity, imperfectly stated. In the winter of 1748-49 he was feeling his way to his final conclusions. The two points of his paper on "Opinions and Conjectures Concerning the Properties and Effects of the Electrical Matter, and the Means of Preserving Buildings, Ships, etc., from Lightning, Arising from Experiments made at Philadelphia, 1749," were, first, the power of points to draw off electricity, and secondly, the identity of electricity and lightning. The paper which contained his statement of these conclusions was sent to Europe in July, 1750.

In June, 1752, Franklin was ready to test the identity of electricity and lightning by his well-known flight of the kite, which solved the problem, and made his name immortal as a scientist. The story is not so old or so well known as to have lost impressiveness. The scene of the experiment was Philadelphia; the date was June 15, 1752. Franklin took no one into his confidence except his son,



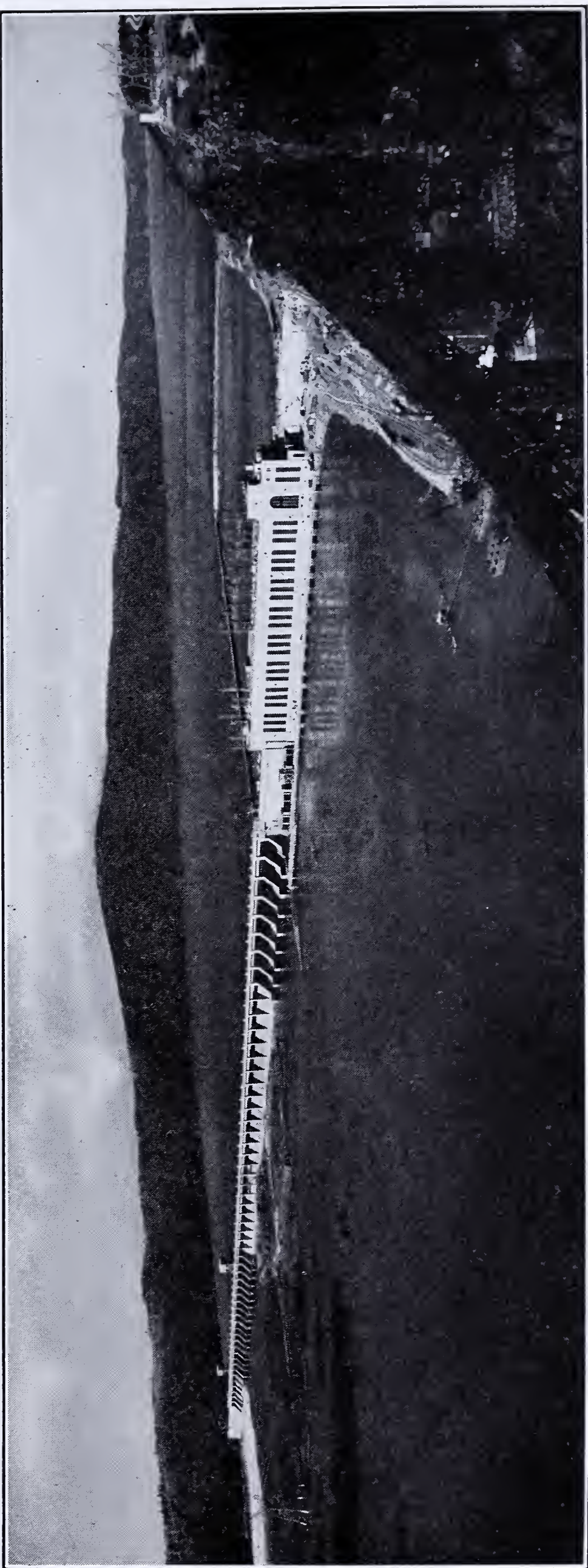
Benjamin Franklin

William, then a young man of twenty-two, one of the beaux of the city, afterward the Tory Governor of New Jersey.

The kite was constructed of a very large silk handkerchief, with a piece of sharpened iron wire fastened at the top of the frame. Its string was hempen, except that part held in the hand, which was silk. At the end of the hempen string a common iron key was fastened, and in a shed was deposited a Leyden jar in which to collect electricity from the clouds, if they should prove to contain it. At last a thunder cloud passed directly over the kite, but no signs of electricity appeared. As the hopes of father and son grew faint, Franklin observed the fibres of the string to rise, and he held his knuckles to the key and drew therefrom an

unmistakable spark, and another and another, and as many as he chose. The jar was charged, the wet kite drawn in and packed and the philosopher went home exulting. In 1753 Franklin received the Copley medal from the Royal Society of London, and was unanimously elected a member for this most brilliant discovery. For twenty years he was an ardent electrician.

Philip Syng, of Philadelphia, made the science of electricity a subject of constant study and laborious experiment. He invented an electrical machine similar to those used in Europe, of which he had never heard, and assisted Dr. Franklin in his experiments. The latter acknowledged his valuable suggestions and discoveries, as did the great scientist, William Bartram. Four of these great scientists, among whom was Syng, gave a public exhibition in 1748, in which they demonstrated the powers of the new force. Syng was a member of Franklin's "Junto," which later became the basis of the American Philosophical Society.



Power Plant and Dam at Safe Harbor

Eben Kinnersley was another co-worker with Franklin, and professor of chemistry in the College of Philadelphia. He studied carefully the problems of electricity, made many discoveries, and delivered a series of lectures upon the subject over the country. The results of his researches were transmitted to Europe by Dr. Franklin.

More recent Pennsylvanians who became eminent in the science include the names of David Alter, of Allegheny County, who made a crude telegraph instrument before Morse; Daniel Drawbaugh, of Cumberland County, who invented and used a telephone before Bell; Edwin J. Houston, of Philadelphia, a noted electrical engineer, educator, and inventor of numerous electrical appliances and machines; John Renshaw Carson, native of Pittsburgh, noted research engineer and radio inventor, for which he was awarded the Liebmman Medal, in 1924; Lewis W. Chubb, of Cynwyd, who has been awarded more than a hundred patents, the result of electric and chemical research; Alexander J. Wurts, native of Carbondale, professor of engineering research at Carnegie Institute, Pittsburgh, discoverer of the five non-arching metals, also awarded the John Scott medal by Franklin Institute for inventions in lightning arresters; and John Abbet Walls, native of Lewisburg, noted electrical engineer, and vice-president and chief engineer of Pennsylvania Water Power Company, and Safe Harbor Water Power Corporation, and International Power and Securities Corporation. He was the engineer for the great hydro-electric plants at Holtwood and Safe Harbor, and in other parts of this and other countries. Prof. Elihu Thomson, of Philadelphia, world famous scientist and inventor, was one of the founders of the General Electric Company. He is the holder of more than 700 patents, inventor of such vital things as the arc lamp, electrical transformer, and electric welding. He served as professor of chemistry in Central High School of Philadelphia, from his graduation in 1870 until 1880. He organized the Thomson-Houston Company in 1892. He is the single surviving member of the so-called "Big Four" of electricity. Dr. Harry Phillips Davis, of Pittsburgh, who died recently in Pittsburgh, was known as "the father of radio broadcasting." The first public broadcast was when KDKA transmitted presidential election returns of 1920. When the National Broadcasting Company was organized in 1926, Davis was the chairman. He was a director of many important corporations.

Astronomy—The first scientific communication was made to the Philosophical Society on March 22, 1768, and it now stands as the first paper in its series of Transactions. It is entitled "A Description of a New Orrery, planned and now nearly finished by David Rittenhouse, A. M." Rittenhouse was without doubt the first inventor of a practical planetarium, erroneously called the "orrery," an instrument so constructed as to exhibit the movements of the planets around the sun. In theory the idea was not new. Such an instrument had been made for the Earl of Orrery, in 1715, but this was a mere toy and gave the movements of only two heavenly bodies.



Birthplace of David Rittenhouse

Rittenhouse determined that he would make an elaborate instrument based on scientific principles, and on the astronomical calculations which he had prepared. After three years of labor, in 1779, the "Rittenhouse orrery" was completed. This original instrument was purchased by Princeton University for the sum of £300. The trustees of the College of Philadelphia, now the University of Pennsylvania, were offended, but Rittenhouse immediately set to work and constructed a duplicate, which was purchased for the college by the proceeds of a series of lectures on astronomy by Dr. William Smith, provost of the college. This second orrery was much longer, and a better instrument than the original, but was constructed on the same model. Mr. Rittenhouse received £400 for this orrery.

Fels Planetarium in a great hall in the Franklin Memorial is one of the only two in America, the other one, the Max Adler planetarium, being on the lake front in Chicago.

Astronomers throughout the entire world in 1769 were anxious to make an observation of the transit of Venus over the sun's disc, which occurred June 3. Many expeditions were fitted out to observe this celestial phenomenon, which would not occur again until 1874.

Mason and Dixon, the English astronomers, who gained undying fame as the surveyors of the boundary line between Pennsylvania and Maryland, started on a ship of war for their station on the southern hemisphere, but they were attacked by a French frigate and were compelled to return to port after a severe battle. Other expeditions became celebrated through the adventures to which they gave rise. The transit of 1769 was visible in the Atlantic States and observations upon it were made under the auspices of the American Philosophical Society at Philadelphia. The most celebrated of all these observers was David Rittenhouse.

In 1768 the American Philosophical Society petitioned the Assembly of Pennsylvania for assistance to observe the transit of Venus, when the proposition was treated with liberality, and £100 was granted to enable the society to procure a reflecting telescope of two and a half or three feet focus and a micrometer of Dolland's make, which had to be procured from England. They were purchased there by Dr. Franklin. The society erected a wooden building as an observatory in the State House yard, which was of circular shape, and about twenty feet high, twelve to fifteen feet square.

On the morning of June 3 the sky was cloudless. The transit was observed from this improvised observatory by Dr. John Ewing, Joseph Shippen, Dr. Hugh Williamson, Thomas Prior, Charles Thomson and James Pearson. While they were thus engaged, David Rittenhouse, Dr. William Smith, John Sellers and John Lukens noticed the phenomena at Norriton, the home of the celebrated astronomer. Owen Biddle made an observation at Henlopen lighthouse.

Rittenhouse was a member of the American Philosophical Society, and also made his observations for that society. He used a telescope and other instruments made by his own hands. His observations were received with interest

by scientific men everywhere. Subsequently they were found to be nearly accurate and his computations placed him among the greatest of astronomers. The royal astronomer of England bore testimony to their value and another high authority said: "The first approximately accurate results in the measurements of the spheres were given to the world, not by schooled and salaried astronomers who watched from the magnificent royal observatories of Europe, but by unpaid amateurs and devotees to science in the youthful province of Pennsylvania." On November 9 of the same year David Rittenhouse made an observation of the transit of Mercury, which was the fourth ever witnessed. About this time he also determined the difference of the meridians of Norriton and Philadelphia.

On the bi-centennial of his birth elaborate celebrations were held in Philadelphia and in other parts of America in honor of Rittenhouse, who is now renowned as Pennsylvania's greatest native scientist.

Other Astronomers—The total eclipse of the sun, June 16, 1806, attracted much attention among scientists, and it was observed at various places. Andrew Ellicott watched the phenomenon at Lancaster, Pennsylvania, while it was also observed in other eastern States, by distinguished astronomers, sent out under the auspices of the American Philosophical Society. Prof. Samuel P. Langley, of Pittsburgh, was a noted astronomer, who also worked out the principles of the aeroplane. John D. Brashear, also of Pittsburgh, built the best astronomical instruments in the world. James R. Lick, native of Lebanon County, gave to the world the celebrated Lick Observatory, in California.

Photography—Philadelphia made the largest initial contributions to the general knowledge of the new art of photography. The first daguerreotype made in America, a view from a window of the old Mint, was the work of Joseph Saxton. Robert Cornelius, a worker in metal, became interested in the new process, and made the first successful plates in 1839; they were silvered copper. Dr. Paul Goddard, an associate professor of chemistry, University of Pennsylvania, introduced bromine as an accelerator, a most important improvement. Daguerre's original process called for the use of dry iodine, which was very slow in its action. Cornelius used dry iodine, but he made exposures only on bright sunny days and used an ingenious arrangement of mirrors to concentrate the rays of the sun on the sitter. One of the first three tintypes made in America, that of the portrait of Henry Myers, a friend of Cornelius, is among the exhibits in Franklin Institute.

The Photographic Society of Philadelphia is the oldest in this country, and the second oldest in the world, dating from 1862. In the earlier days of photography there were no big businesses handling the development of the science, consequently the coterie of scientific men who organized the Philadelphia society were really pioneers in photographic experiment, and few realize the extent to which modern photography owes its development by members of this group.

The sensitive plate first reached its final perfection in the form of a collodion emulsion at the hands of Lewis T. Young and D. Anson Partridge, members of the Photographic Society of Philadelphia. This material held its own until the introduction of the gelatine dry plate of today. Mr. Young was also the inventor of the direct vision finder for cameras, without which a snap shot would be impossible. Mr. Partridge also invented the solid frame plate holder. Another member of the society, John R. Clemons, was the pioneer manufacturer of albumen coated printing-out paper, and John Carbutt, also a member, was the pioneer maker of gelatine dry plates, which he shipped to all parts of the world.

Joseph Zentmayer designed a successful lens, but an even more important and outstanding achievement was the invention of the half tone process for the reproduction of photographs on the printing press, by Frederick E. Ives, also a member of the society. He also added the first practical method of photography in the colors of nature. The first successful magnesium flash powder was made by John Bartett, a member, who called it Blitz Pulver. The first panoramic camera, in which the exposure of the negative was synchronized with the revolution of the instrument was made by Percy Marcellus, a member.

While these inventions may be the high spots, it may be of interest to note that Mathilda Weil, a member, received the gold medal of the Royal Photographic Society of London. William Bell, and his son-in-law, William H. Rau, photographed in more corners of the world, and with greater success than any other photographers of their day. Members of the society are found in the front rank of science, profession, and business; to most of them photography is an avocation.

The first motion pictures were produced in Philadelphia, and were shown in that city for the first time.

Arctic Explorations—About the middle of the eighteenth century several expeditions were sent from the English colonies of America towards the Arctic regions. They appear to have originated mainly from a desire to find a northwest passage for the sake of commerce. The voyage of an American vessel is mentioned in a book published in 1768, and appears to be a portion of Captain Charles Swaine's journal of his voyage in 1753. Captain Swaine had met an English vessel off the Labrador coast, the mate of which stated that he had made a trip on the coast of Labrador. By a curious coincidence of nomenclature, the first American known to make an Antarctic discovery was also a Captain Swaine.

The Swaine expedition to the Arctic region in 1753 was a purely commercial venture in search of the northwest passage, and was mainly a Philadelphia enterprise. Captain Swaine sailed from Philadelphia, in the schooner "Argo," on March 2, 1753. The ship was of sixty tons, with fifteen persons aboard.

The schooner had a hazardous voyage from the beginning, having sailed into an ice field and before freed of it, had met with two Danish ships which had been bottled up in the ice for many weeks, the officers of which assured the commander

of the "Argo" that ice was fast to the shore all above Hudson's Straits to the distance of forty leagues out, and that there had not been such a severe winter in the past twenty-five years, during which they had sailed in those waters. The "Argo" attempted, however, to sail around the ice, and succeeded in getting into the straits on June 26, and made the Island Resolution; but on account of the driving ice was compelled to get into the clear sea by July 1. On the 14th, Captain Swaine tried again for an opening and met four of the Hudson Bay ships endeavoring to get in, so they continued together until the 19th, when they parted. The "Argo" made repeated attempts to the straits, but in vain, and as the season for exploration on the western side of the bay was now passed, she headed for the Labrador coast and navigated no less than six inlets, charted the country, and obtained an accurate account of the soil, products and inhabitants. Captain Swaine published the best description of Labrador up to that time. In one of the harbors they found a deserted wooden house with a brick chimney. It was in one of these harbors that Captain Swaine met with Captain Goff in a snow from London, who informed him some Moravian brethren had the year before built the house. The Eskimos decoyed the then captain of the snow, and six of his crew, in a boat some distance away, under pretence of trade, and carried them off. The snow, after waiting sixteen days without hearing from them, took away the Moravians to help work the vessels. Part of her business this year was to search for these men. Captain Swaine discovered fine fishing banks. No accidents happened to vessel or crew, and their health during the voyage was excellent. The "Argo" arrived back in Philadelphia on Sunday, November 11. The subscribers were satisfied with Captain Swaine's efforts, as evidenced by a fine repast served in his honor at the Bull's Head, November 23, when they also voted him "a very handsome present."

Another expedition was sent from Philadelphia, October 20, 1754, also under Captain Swaine, which resulted in a more thorough exploration of the Labrador coast, for which this distinguished Pennsylvania officer should be remembered among Arctic voyagers.

Elisha Kent Kane, born in Philadelphia, February 20, 1820, was a celebrated explorer of the North and a national hero. He entered the navy as assistant surgeon, 1843, serving on the "Brandywine," which carried Caleb Cushing to China, as United States Minister. The vessel stopped at Rio de Janeiro, long enough for Kane to make a trip to the eastern Andes of Brazil for geological investigation. He made similar trips to Bombay, Ceylon, and other localities. When the legation reached Macao, Kane explored the Philippine Islands, descending into the crater of Tael, a volcano upon the island of Luzon, a feat previously attempted by but one European. Here he nearly lost his life. His experiences included six months of practice as a physician in Whampoa, China, an encounter with Bedouin robbers, in Egypt, and a visit to the King of Dahomey in Africa. Here he fell a victim to the coast fever and was sent home in 1847 on a Liberian transport.

Disease and weakness failed to prevent him from entering the army in the Mexican War as a surgeon; he took ship to Vera Cruz, and there started toward the army of General Scott, then in the city of Mexico. His escort was attacked by Mexicans, and but for Kane's personal bravery all would have been captured. He was again attacked. He was also stricken with fever and ordered home. The city of Philadelphia honored him by the presentation of a sword.

In 1850 Kane sailed, on two days' notice, as surgeon of the "Advance," under Lieutenant Edwin J. DeHaven. This was one of the two vessels sent to the Arctic Sea in search of Sir John Franklin and his companions, who had sailed in search of the northwest passage from Baffin's Bay to the Pacific, in 1845.

The vessels left New York in May, 1850, and returned in September, 1851. Traces of Franklin and his men were found, but the expedition gained no knowledge of their fate. So carefully did Dr. Kane serve his fellows, that even though attacked by scurvy, no one died.

Dr. Kane published a narrative of the voyage, lectured in many cities, and, as he was a national hero, managed to raise money enough to fit out a small ship, in which he, as commander, and seventeen other brave men sailed on a second expedition, May 30, 1853. On August 23, 1853, they reached Greenland by way of Smith's Sound, the highest latitude ever attained by a sailing vessel at that time, where it remained fast the entire period it was absent. Short journeys were successfully made, and sledge parties were sent out for exploration. Dr. Kane prosecuted scientific investigations, but the winter was one of suffering from want of food and fuel, as also from the scurvy.

One of Kane's most interesting discoveries was the great glacier Humboldt. Morton, one of the party, with the Eskimo Hans, discovered what he and Kane firmly believed to be the open Polar Sea. During their imprisonment in the ice, Kane enlarged his knowledge of the Eskimos, and discovered lands before unknown.

After enduring the most extreme hardships, in which two men lost their lives, two their toes, others were snow blind, some delirious, and two others afterward died from exposure, the vessel was finally abandoned in May, 1855. Three boats, mounted on sledges bore provisions, and they traveled 1200 miles before they reached Upernavik, August 6, 1855, to learn that an expedition had been sent in search of them. They reached home in October, and were enthusiastically honored in America and England.

Kane published the narrative of this expedition in 1856, from which we have learned most of our knowledge of the Arctic Sea. He was celebrated as an explorer of the first rank. His health was broken and he visited England, where he called on Lady Franklin. He sailed for Cuba, reached Havana on Christmas Day, 1856, but he lived only until February 16. His body was carried to New Orleans and thence to Philadelphia. All principal cities on the way held impressive ceremonies in his honor. In Philadelphia the body lay in state in Independence Hall. The

funeral was one of the most imposing ever seen in the city. The burial was made in Laurel Hill Cemetery.

Dr. Isaac Israel Hayes, native of Chester, 1832, was the surgeon on the second Grinnell expedition in 1853; in 1860 he led an expedition to the North. His writings are important. Thomas Janvier, of Philadelphia, was a noted Arctic explorer. Charles Pickering, born at Starucca Creek, 1805, and a grandson of the patriot, Timothy Pickering, was the naturalist on the United States Exploring Expedition, under Lieutenant Charles Wilkes, 1838-42; he also traveled through Africa and India. William Henry Gilder, a major in the Civil War, in 1878 served on an expedition to the Arctic regions, and again in 1881, with the Rogers expedition, as correspondent of the "New York Herald."

The National Geographical Society, on April 6, 1922, unveiled in Arlington National Cemetery, at Washington, a memorial at the grave of Rear Admiral Robert E. Peary, U. S. N. The occasion also marked the thirteenth anniversary of Peary's discovery of the North Pole. Hon. Edwin Denby, Secretary of the Navy, opened his address as follows: "The discovery of the North Pole by Civil Engineer Robert E. Peary, U. S. N., on April 6, 1909, was a supreme achievement in courage, endurance and tenacity of purpose. His victory will stand forever as a paramount example of the conquest of spirit over matter. When the dispatch, 'Stars and Stripes nailed to the North Pole,' went flashing through the crisp Labrador air from the wireless station at Indian Harbor, all the civilized nations were thrilled with surprise and interest by the wonderful news; but those who had studied the history of Arctic exploration in the past three hundred years, and had followed Peary in his twenty-three years of hard brutal labor, with cold, hunger and darkness, blinding snow and dazzling Arctic light, with terrific wind and impassable water and probable death before him, thanked God that the will of this man had proved stronger than the forces of nature."

Admiral Peary was born in Cresson, Pennsylvania, May 6, 1856. He was of French and Saxon blood, and numbered among his ancestors many seamen, soldiers and pioneers. His first expedition northward was made in 1886, when, with one companion, he penetrated the Greenland ice-cap for one hundred miles, east of Disco Bay. In 1891, with a party of six, he went to Northern Greenland and made a brilliant sledge journey of 1300 miles, crossing Greenland to its Atlantic coast and discovering Independence Bay. In 1893-95 he again crossed Greenland, and in 1897 voyaged to Cape York, and brought back an immense meteorite discovered there. In 1898 he went north in quest of the North Pole, remaining until 1902. He reached $83^{\circ} 39'$ north latitude.

Peary started on his eighth Arctic expedition July, 1908, on the "Roosevelt," establishing winter base at Cape Sheridan, September 5. He left this base, February 15, 1909, in five detachments which were sent back one after another, the fourth, in command of Captain Robert A. Bartlett, leaving Peary near the 88th parallel. From this point with only Matt Henson, of his crew, and four Eskimos,

Peary made the final dash of 130 miles to the pole in five days, which they reached April 6, 1909. Peary was promoted to the rank of Rear Admiral, and given the thanks of Congress, March 3, 1911. He did not long enjoy the great honors he so richly merited, dying in Washington, D. C., February 20, 1920. A handsome monument has recently been erected by the Government on a high cliff at Cape York to Admiral Peary and his men.

Henry Grier Bryant, born at Allegheny, Pennsylvania, was second in command of the Peary Relief Expedition in 1892; as the commander of the Peary Auxiliary Expedition, 1897, he led an expedition into Alaska and Labrador; and made mountain ascents in different parts of the world. Donald A. Cadzow, of Harrisburg, was the anthropologist on the expedition of the American Museum of Natural History to Baffin Island, led by George Palmer Putnam in 1927. George Weymouth, of Lock Haven, also accompanied this expedition.

American Philosophical Society—In 1743 Benjamin Franklin, who did so much to excite and promote the love of literature, science, and human progress in the mind of conservative Pennsylvania, was the originator of the American Philosophical Society. Being impressed with the importance of establishing a national institution for the cultivation of science, he, on May 14, 1743 (old style) corresponding in the Gregorian Calendar to May 25, issued and distributed a proposal for this purpose in the form of a printed circular, entitled "A Proposal for Promoting Useful Knowledge among the British Plantations in America."

After speaking of the great extent of the colonial possessions, this paper says: "The first drudgery of settling new colonies, which confines the attention of people to mere necessities, is now pretty well over; and there are many in every province in circumstances that set them at ease, and afford leisure to cultivate the finer arts and improve the common stock of knowledge. To such of these who are men of speculation many hints from time to time arise, many observations occur, which, if well examined, pursued, and improved, might produce discoveries to the advantage of some or all of the British plantations, or to the benefit of mankind in general. But as, from the extent of the country, such persons are widely separated, and seldom can see and converse or be acquainted with each other, so that many useful particulars remain uncommunicated, die with the discoverers, and are lost to mankind, it is to remedy this inconvenience for the future, proposed:

That one society be formed of virtuosi, or ingenious men, residing in the several colonies, to be called The American Philosophical Society, who are to maintain constant correspondence.

That Philadelphia, being the city nearest to the center of the continent colonies, communicating with all of them northward and southward by port, and with all the islands by sea, and having the advantages of a good growing library, be the center of the society.

That at Philadelphia there be always at least seven members, viz., a physician, a botanist, a mathematician, a chemist, a mechanic, a geographer, and a general natural philosopher, besides a president, treasurer, and secretary.

That these members meet once a month, or oftener, at their own expense, to communicate to each other their observations and experiments; to receive, read and consider such letters, communications, or queries as shall be sent from distant members; to direct the dispersing of the copies of such communications as are valuable to other distant members, in order to procure their sentiments thereupon.

The exact date of the organization of the society is uncertain, but it was during the year 1743. On April 5, 1744, Dr. Franklin, in a letter to Cadwallader Colden, of New York, states that "the society, so far as relates to Philadelphia, was actually formed, and has had several meetings to mutual satisfaction." In this same letter the following list is presented of the original members: Dr. Thomas Bond, as physician; John Bartram, as botanist; Thomas Godfrey, as mathematician; Samuel Rhoads, as mechanic; William Parsons, as geographer; Dr. Thomas Bond, as general natural philosopher; Thomas Hopkinson, president; William Coleman, treasurer; and Benjamin Franklin, secretary. A glance is sufficient to attract one's attention to the eminence of those embraced on this list. This was the earliest American institution devoted to science, and was organized nearly half a century earlier than any learned society elsewhere in the United States.

The work of the society was divided into six committees, as follows: first of geography, mathematics, natural philosophy, astronomy; second, of medicine and anatomy; third, of natural history and chemistry; fourth, of trade and commerce; fifth, of mechanics and architecture; and sixth, of husbandry and American improvements. To those were added, in 1816, a committee on moral and general history, science and literature. In more recent years the several classes are: General Science; the Mathematical Sciences; the Inorganic Sciences; the Organic Sciences; the Historical Sciences; the Social Sciences; the Spiritual Sciences; and Personal Science.

An important event in the history of science in Pennsylvania was the donation by John Hyacinth de Magellan, in 1786, of two hundred guineas to the American Philosophical Society for establishing premiums to be awarded to the authors of discoveries and improvements. In 1801 Thomas Jefferson, then President of the United States, was also president of the American Philosophical Society.

Academy of Natural Sciences—The Academy of Natural Sciences was organized in Philadelphia, on January 20, 1812, and is today the leading institution of its field in the country. "The Journal of the Academy of Natural Sciences," was established in 1817, and was published at irregular intervals until the present time, and these publications have ever been a feature of considerable interest.

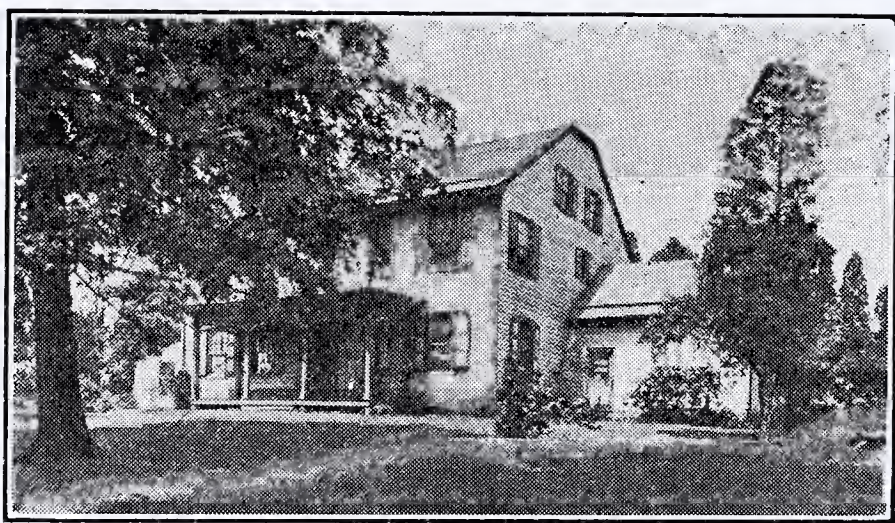
Most of the recent scientific investigations within the Commonwealth have been made under the auspices of or connected with the Academy. This work was

vigorously pushed during the administration of the late Dr. Samuel G. Dixon, who was also the head of the State Department of Health. George Washington Tryon, native of Philadelphia, 1838, originated the movement for construction of the home of the Philadelphia Academy of Natural Sciences. Editor "American Journal of Conchology," 1865-71. His publications included "Land and Fresh Water Shells of North America"; "American Marine Conchology"; "Manual of Conchology" (12 volumes), etc. He died February 5, 1888.

Chemistry—Two of the early noted chemists, Dr. Joseph Priestley and Thomas Cooper, were adopted Pennsylvanians who made many valuable discoveries after settling here. The former announced in 1774, his discovery of "dephlogiscated aid" (oxygen) to a large assemblage of philosophers who were dining at the house of M. Lavoisier, in Paris. This was man's first introduction to that mighty element which supports all life.

Dr. Priestley's life presents strong contrasts. He was the central figure in the great gatherings of that day, receiving the highest honors of his own and other governments, and, when he embraced the cause of liberty in religion, the tide turned and he was denounced, persecuted, the victim of the mob, his home and library burned and pillaged and he and his estimable wife barely escaped with their lives.

After the "Birmingham Riots" of 1791, in which his home was destroyed, Dr. Priestley came to America, and settled for a short time in Philadelphia, where he enjoyed the association of the great men of the country. His son, who preceded him to America, had settled at Northumberland, and there the distinguished Dr. Priestley



Home of Dr. Joseph Priestley, Northumberland

went July, 1794, and soon built a beautiful home on the banks of the North Branch of the Susquehanna, and fitted out a laboratory, and at once began his experiments. This house is still standing and is one of the most valuable historical shrines in Central Pennsylvania. Here his experiments continued which resulted in the discovery of three new gases. He wrote many

books, and gained the enviable reputation as the greatest chemist in the country.

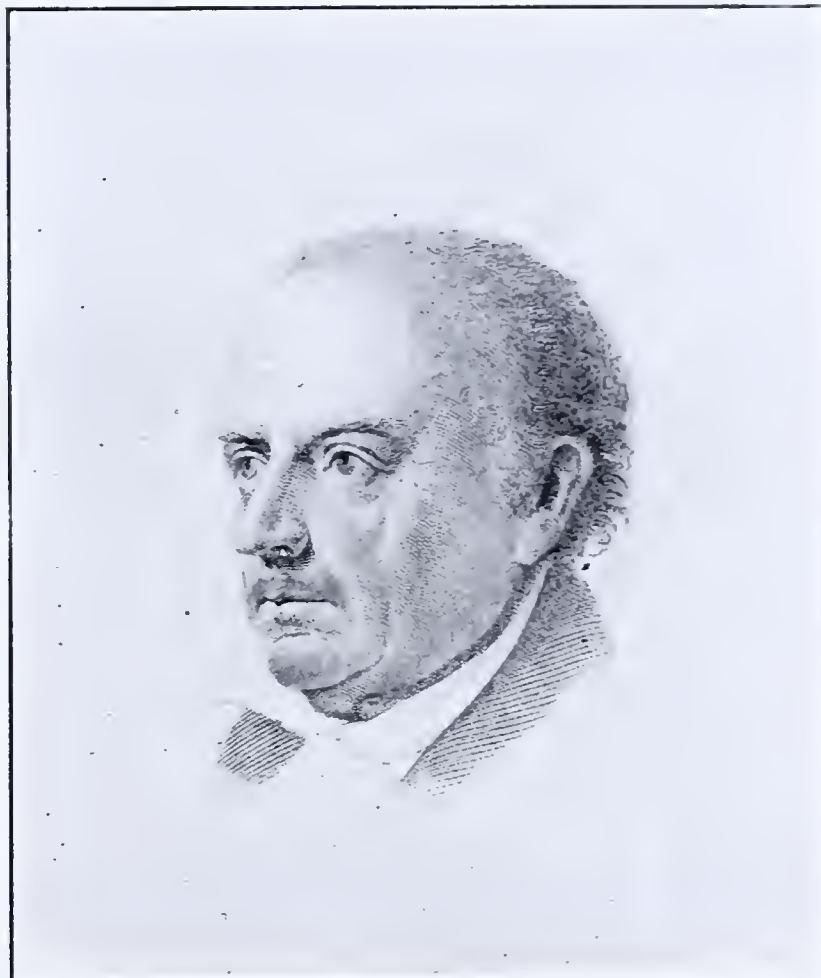
On July 31, 1874, the chemists of America met at Northumberland to celebrate at the grave of Dr. Priestley the centennial of his great discovery of oxygen; and messages were flashed across to chemists who were met the same day in Birmingham, England, to unveil a colossal monument on the spot, where the mob, in 1791, had burned his library of 30,000 volumes, his private correspondence, his diaries, and drove him from the streets of that city. This great celebration in the town

of his adoption was attended by the eminent chemists and scientists of that day in America and Canada, and they paid a just tribute to one of the greatest of Pennsylvania's adopted sons. Professor Chandler of Columbia College presided at this memorable celebration. The bi-centennial of his birth, in 1933, was celebrated at the home of Dr. Priestley, and pilgrimages of scientists constantly visit this now historic place, where he lived, and died February 6, 1804.

Thomas Cooper, also a native of England, and intimate of Dr. Priestley, was a distinguished scientist, judge, author, and educator. After serving a sentence for libeling President John Adams, in 1799, he served as judge of Northumberland, Lycoming and Luzerne counties, and in 1811 became professor of chemistry in Dickinson College, then held the same chair in the University of Pennsylvania, 1816-21, when he was called to the same chair in South Carolina College, and a year later was elected president of the college. He wrote numerous important works on the subject.

Robert Hare, scientist and educator, was born in Philadelphia, January 17, 1781. In 1801 he communicated to the Chemical Society of Philadelphia a description of the oxyhydrogen blowpipe, which he first called hydrostatic blowpipe, and which Professor Silliman, of Yale College, who had later conducted experiments with the instrument, terms a compound blowpipe. By it a jet of oxygen and hydrogen combined in the same proportion as in water was ignited and produced an amount of intense heat far exceeding what had ever before been obtained. This apparatus, according to Professor Silliman, was the most remarkable of Dr. Hare's original contributions to science. Subsequently, in 1839, Dr. Hare received for this invention the first Rumford medal awarded by the American Academy of Arts and Sciences.

Hare next invented the valve cock, with which he effected airtight communications between cavities in separate pieces of apparatus. In 1816 he invented the calorimotor, a form of battery, in which a great amount of heat was produced, and it was many years before any other voltaic apparatus was constructed which had the same economical value. Four years later he devised the deflagator, a modified form of the same apparatus, which in 1823 was employed in volatilizing



Hon. Thomas Cooper

and fusing carbon. It was with these batteries that the first experiments in the application of voltaic electricity to blasting under water was made in 1821 under the inventor's direction. Dr. Hare was also distinguished in chemistry, and was the author of a process of denarcotizing laudanum, as well as a method for detecting minute quantities of opium in solution. In meteorology he was chiefly noted as an expounder of an electrical theory of storms, as opposed to the rotary theory.

The following Pennsylvanians attained high rank in the field of chemistry: Lardner Vanuxem, born in Philadelphia, in 1792, was professor of chemistry and mineralogy at South Carolina College, 1820-26; geologist, 1826-28, in New York, Ohio, Kentucky, Tennessee, and Virginia; State Geologist of New York, 1836-42; James Curtis Booth, born Philadelphia, in 1810, professor of chemistry in Franklin Institute; with geological survey of Delaware and Pennsylvania; smelter and refiner United States Mint, 1849-88; Traill Green, native of Easton, professor of chemistry at Marshall College and Lafayette College for nearly fifty years; Henry Wurtz, Henry Morton, Emory McClintock, Persifer Frazer, Abram Adam Breneman, Edgar Fahs Smith, Samuel Philip Sattler, William Henry Wahl, Edward Hart, Walter Otheman Snelling, Hiram Lukens, Porter William Shimer, Richard Edwin Lee, William A. Hamor, Ferdinand Rudolph Hassler, Matthew Carey Lea, and Henry Leffmann.

Civil Engineering—Andrew Ellicott, born in Bucks County, January 24, 1754, was a noted civil engineer, scientist and statesman. He also became the first Surveyor General of the United States. His father was noted for his mechanical skill and inventive genius, devising some of the most famous clocks, mathematical and astronomical instruments of his day. The son, Andrew, enjoyed the friendship and confidence of such men as Washington, Franklin, and Rittenhouse. From a period preceding the Revolution to the day of his death he was employed in the fulfillment of trusts conferred by the Federal or State Governments.

At various times he was employed as a civil engineer and commissioned to mark boundaries of different states, including Virginia, Pennsylvania, and New York. In 1786 he was commissioned by the Supreme Executive Council to run the northern boundary of Pennsylvania, and in 1788 he was directed to make a survey of the islands in the rivers Allegheny and Ohio within the bounds of the Commonwealth. In 1789 he was commissioned by the United States Government to locate the western boundary of New York State, and ascertain the validity of the claim of that State to the site upon which Erie, Pennsylvania, now stands. He located the line, after much hardship and trouble, some twenty miles east of Presque Isle. He also, in the same year, made the first accurate measurement of the Niagara River from lake to lake, computing the height of the falls and the descent of the rapids. This valuable service was appreciated by President Washington and others in authority. Ellicott notes in his journal at the completion of the Erie survey: "General Washington has treated me with attention." He con-

tributed to the transactions of the American Philosophical Society, of which he was an active member, and also conducted correspondence with many of the learned societies of Europe.

In 1790 Ellicott was employed by the Federal Government to survey and lay out the District of Columbia and Washington city, and in recognition of these services he was, in 1792, given the rank of Surveyor General of the United States. In 1795 he superintended the construction of Fort Erie, at Presque Isle, now Erie, Pennsylvania, and surveyed and laid out the towns of Erie, Warren, and Franklin. In the following year he was appointed by President Washington as United States Commissioner to locate the boundary between the United States and Spanish possessions, under the treaty of San Lorenzo et Real, which survey occupied nearly five years. Upon the completion of this important work he was appointed, October 1, 1801, by Governor McKean, secretary of the Pennsylvania Land Office, which office he resigned April 1, 1809, and on September 1, 1813, he became professor of mathematics in the United States Military Academy, West Point, retaining the position until his death.

In 1817 he was sent by the Federal Government to Montreal for the purpose of making certain astronomical observations necessary to the fulfillment of a portion of the Treaty of Ghent.

Nicholas Scull, born near Philadelphia, in 1687, was employed in one of the earliest surveys of Pennsylvania, and in 1748 succeeded William Parsons as Surveyor General of the Province. A map made by him of the improved parts of Pennsylvania was published by act of Parliament in January, 1759. He died in Philadelphia in 1762, leaving three sons, all of whom followed the profession of their father.

John Lukens was another early and prominent surveyor, and was one of those associated with David Rittenhouse in 1761 on the survey of the boundary line between Pennsylvania and Maryland, which later came to be known as the Mason and Dixon Line. He also was one of the scientists who observed the transit of Venus in 1769. Benjamin Rittenhouse, brother of David Rittenhouse, born in Montgomery County, 1740, the surveyor of the Schuylkill River in 1789, made a surveyor's chain by order of Congress in 1796, which has been the standard of the United States ever since. Thomas Hutchins, of Pittsburgh, was the geographer in the Continental Army. William Ward Duffield, of Carlisle, Major General in the Civil War, was an eminent civil engineer. William Milnor Roberts, born in Philadelphia, 1810, was assistant engineer of the Portage Railroad; designed the first combined railroad and highway bridge across the Susquehanna River at Harrisburg; built bridges and harbors in Brazil; and was chief engineer of the Northern Pacific Railroad.

Meteorologist—Willis Luther Moore, born at Scranton January 18, 1856. At the age of eight he was with his father in the War of the Rebellion. Entered the Weather Bureau and became professor of meteorology in 1894, and has served as chief of the Weather Bureau since 1895. Speaker and writer on the subject.

Archæologists—Henry Phillips, born Philadelphia, 1828, was an eminent archæologist and numismatist. Dr. John Alden Mason, curator American archæology and ethnology, University of Pennsylvania Museum since 1926, has led many expeditions in this and other countries, and is the author of works on the subject. Donald A. Cadzow, archæologist for the Pennsylvania Historical Commission, has made explorations into the Arctic region, and in Central and South America, and directed the recent successful archæological research at Safe Harbor.

Palæontologists—Edward Drinker Cope, of Philadelphia, made a special study of palæontology, and his fame was world-wide. Ernst Haeckel, the celebrated German scientist, said of him that he described and named about one-third of all the known fossil vertebrates of North America, or about 1155 species. William Moore Gable, native of Philadelphia, director of palæontological section of Whitney's geological survey of California, 1862-65; made surveys in Costa Rica and Santo Domingo. He published works in two volumes, California Geological Survey, and others on topography, ethnology, and geology, of Costa Rica and Santo Domingo.

Anthropologists—Stewart Culin, born in Philadelphia, July 13, 1858, was anthropologist curator, Museum Science and Art, University of Pennsylvania, and one of the foremost anthropologists in America, and wrote many valuable papers and reports. The late Doctor William Curtis Farabee, native of Washington, Pennsylvania, was a world-famed anthropologist and curator of the American section of the University Museum. He possessed a knowledge of South America and its aboriginal inhabitants second to no other traveler or anthropologist. Dr. Frank G. Speck, of the University of Pennsylvania, is one of the most eminent of the present day anthropologists.

Geologists—John Fries Frazer, born in Philadelphia, 1812, made the first researches on magnetism in the United States; assisted in the first geological survey of Pennsylvania in 1836; and was professor of natural philosophy and chemistry in the University of Pennsylvania, 1844, until his death, October 12, 1872. He was editor of the journal of Academy of Natural Sciences, 1850-66.

J. Peter Lesley also assisted in the first geological survey of Pennsylvania; traveled afoot through Europe; made researches throughout the coal, oil, and iron regions of Pennsylvania and Canada.

Henry Carvill Lewis served on geological survey of Pennsylvania, 1879-84; professor of mineralogy in Academy of Natural Sciences, 1880, until his death, July 21, 1888. Also professor of geology at Haverford College, 1883-88; studied in Heidelberg and made special investigations regarding origin of the diamond; prepared charts of ice-sheets and glaciers of England, Ireland, and Wales; editor "American Naturalist"; wrote many scientific works.

Garrick Mallery, born in Wilkes-Barre, 1831, executive officer of signal service in Civil War; made geological survey of Dakota; Chief Bureau of Ethnology; wrote "Picture Writing of the American Indians."

William Morris Davis, native of Philadelphia, 1850, professor of geology and meteorology in Harvard University, 1876-1912 (emeritus), published "Elementary Meteorology," "Physical Geography," and "Whirlwinds, Cyclones, and Tornadoes."

Baird Halbertadt, native of Pottsville, eminent geologist and mining engineer, is still active. Assisted in the Pennsylvania General Survey, 1891-93, and is a mining expert for many companies, and a consulting geologist. Contributor of numerous articles to mining and scientific journals, and the author of a map of the bituminous coal regions of Pennsylvania.

George H. Ashley, of Harrisburg, State Geologist since 1919, is one of the eminent geologists of America, and has been associated with this science in many States. Author of numerous geological reports and articles in technical journals.

Benjamin LeRoy Miller, of Bethlehem, eminent geologist. Associate geologist, Pennsylvania Geological Survey, since 1919. Consulting editor "Engineering and Mining Journal," and has published numerous articles on this subject, the result of surveys in this and many other States, and in South America.

Daniel M. Barringer, of Haverford, geologist and mining engineer, and author of "The Laws of Mines and Mining in the United States," 1907; "Minerals of Commercial Value," 1907, etc. He discovered origin of Meteor Crater, Arizona, 1905, and made valuable findings.

Thomas Cramer Hopkins, native of Centre County, is a noted geologist, and professor at State College, 1896-99, and at Syracuse University, 1900-32. He is the author of numerous important textbooks and treatises.

Naturalists—Thomas Say, of Philadelphia, was the first American to gain a national reputation as a naturalist. Isaac Lea, born in Delaware, March 4, 1792. Partner in large publishing business in Philadelphia, 1821 to 1851, but devoted much attention to study of natural history, and his various collections of minerals, fossils and shells are valuable contributions to science. His observations were published in the "Transactions" of the American Philosophical Society. His collection of mollusks and gems are in the National Museum at Washington, D. C. He died in Philadelphia, December 7, 1886. Other noted naturalists of Pennsylvania include John L. LeConte, Dr. Joseph Leidy, Benjamin Smith Barton, William Paul Crillen Barton, Spencer Fullerton Baird, Dr. B. H. Warren, and Wilmer Stone.

Biology—Dr. Joseph Leidy, native of Philadelphia, was professor of anatomy in University of Pennsylvania, and professor of natural history at Swarthmore College. He was the author of many valuable scientific works, and was the leading biologist of America.

Dr. Samuel G. Dixon, of Philadelphia, the first Secretary of the State Health Department, was nationally known for his scientific researches and able administration of his department. Among others prominent in the science were Edward D. Cope, Herman T. Lukens, Caspar Wistar, Henry Darwin Rogers, Henry

Augustus Rowland, and Samuel Christian Schmucker, native of Allentown, author of "The Study of Nature," "The Meaning of Evolution," and "Man's Place in Nature."

Domestic Science—Sarah Tyson Rorer, born in Richboro, Pennsylvania, October 18, 1849. For many years principal of the Philadelphia School for Domestic Science, and lecturer. She edited "Table Talk," 1886-92; the "Household News," 1893-1907; and was on the editorial staff of the "Ladies' Home Journal," 1897-1911. Her publications include "Mrs. Rorer's New Cook Book"; "How to Use a Chafing Dish"; "Colonial Cooking"; "A Book on Diet and Cookery."

Mathematicians—James Henry Coffin, professor of mathematics and astronomy at Lafayette College, 1846, until his death, February 6, 1873, was a noted scholar and published his theory of atmospheric circulation in 1853.

John Thomas Duffield, born at McConnellsburg, 1823, was a professor in Princeton Theological Seminary, and wrote "The Discovery of Gravitation," and "The Philosophy of Mathematics."

Frederick Howard Wines, native of Philadelphia, 1838, was assistant director, United States Census, 1899, and a noted statistician.

Physicists—Henry Augustus Rowland, native of Honesdale, 1848, was professor of physics in Johns Hopkins University, 1876, until his death, April 16, 1901. He invented the dividing engine, and made numerous valuable experiments, and wrote more than one hundred scientific papers and monographs.

William Walker Strong developed a fine mask for diphenylchlorarsin and other poisonous fumes during the World War.

Zoölogists—Thomas Say, of Philadelphia, the noted naturalist, has been styled the father of American zoölogy. Richard Harlan, native of Philadelphia, published three volumes of "Fauna Americana," which was a description of the animal life of the country. William J. Holland, of Pittsburgh, zoölogist and palæontologist, has had a distinguished career; director of Carnegie Institute, 1898-1922; director emeritus since 1922. Decorated for his services by foreign powers, and has long been recognized as an authority upon zoölogy, palæontology, and museum administration in the United States; founder and president American Association of Museums; and a member of a hundred learned societies. Author "The Butterfly Book," 1898; "The Moth Book," 1903; "To the River Platte and Back," 1913; and many scientific papers published by the United States Government, and other organizations.

Henry S. Pratt, of Haverford, noted zoölogist, and author of "Invertebrate Zoölogy," in 1902; "Vertebrate Zoölogy," in 1906; "Manual of Vertebrates in the United States," in 1923; and standard textbooks on the subject. The late Dr. Joseph Leidy contributed many of the most important papers upon the subject of zoölogy and comparative anatomy.

Entomologists—In a practical way the most valuable of all the sciences is entomology, which deals with insects. The reason is that insects prey upon man and his products.

The first entomological society in the United States was "The Entomological Society of Pennsylvania," organized in Philadelphia in 1842, and it was the only one in the country for many years. The American Entomological Society of Philadelphia was founded in 1860, and published proceedings until 1868, after which time the publications became known as "Transactions." The society owns very extensive and valuable collections, and a library, which are deposited with the Academy of Natural Sciences of Philadelphia. "The Entomological News" is the publication of the society.

Frederick Vallentine Melsheimer, born in Germany, September 29, 1749, an eminent Lutheran clergyman, who came to America in 1776, and in May, 1799, accepted a call to five congregations in what is now Dauphin County, and served them until 1784, when he removed to Manheim. In 1787 he entered the faculty of Franklin College, and from 1790 till his death, July 4, 1814, he was pastor at Hanover, York County. He has been styled the father of entomology in America. Certainly he was the earliest investigating entomologist in this country, and his services in the department are frequently referred to by Thomas Say and other scientists. His "Catalogue of Insects of Pennsylvania," was published at Hanover in 1806.

Thomas Say, born in Philadelphia, July 27, 1787, was one of the earliest of the eminent naturalists of the country. As an active member of the Academy of Natural Sciences he made many important collecting expeditions, and was a member of Long's expedition to the Rocky Mountains in 1819. His two chief works were his "American Entomology," and his "American Conchology." It is probable that he described more new species during his career than any other scientist, with but two exceptions. He died October 10, 1834.

Henry Christopher McCook, born July 3, 1837, was a Presbyterian clergyman and most eminent entomologist. After service in the War of the Rebellion, he became pastor of the Tabernacle Presbyterian Church, in Philadelphia. He was an officer of the American Entomological Society, and other learned societies. Among his published works are a number of papers upon the habits and industry of American ants and spiders; also "The Natural History of the Agricultural Ant of Texas," in 1880; "Honey and Occident Ants," in 1882; "Tenants of an Old Farm" in 1884; "American Spiders and Their Spinning-Work," in 1888.

Philip Powell Calvert, born in Philadelphia, January 29, 1871, eminent entomologist, and professor of University of Pennsylvania since 1897. Editor of "Entomological News" since 1911. Author of "A Year of Costa Rican Natural History," published in 1917. Frank Eugene Lutz, native of Bloomsburg, Pennsylvania, eminent entomologist and biologist; curator since 1921 Station for Experimental Evolution, Cold Spring Harbor; and editor of technical journals, author of "Field Book of Insects," 1917; and contributor of numerous papers on varia-

tion, heredity, assortive mating, entomology, etc. A. D. Hopkins, of Pittsburgh, is among the noted of present day entomologists.

Ornithologists—No Commonwealth has contributed so much to ornithology as has Pennsylvania. John James Audubon and Alexander Wilson, the first great American ornithologists were adopted Pennsylvanians, but it was, while residents here that they produced the greatest works on the subject that the world has ever known. William Bartram, son of the great botanist; Jacob Gilliams, and Thomas Wilson, all of Philadelphia, gained international reputations in this field, and Spencer Fullerton Baird, of Reading, was no less celebrated.

Wilmer Stone, born in Philadelphia, September 22, 1866. Graduated University of Pennsylvania, and became curator in charge of the museum of the Academy of Natural Sciences, Philadelphia. He has published "Birds of Eastern Pennsylvania and New Jersey"; "The Molting of Birds," etc.

The late Dr. B. H. Warren, of West Chester, in 1890, compiled a work entitled "The Birds of Pennsylvania." He was at the time ornithologist to the State Board of Agriculture. It was a book of 500 pages and contained 100 plates in colors of our native birds. There was considerable criticism over the cost of the work at the time, but considering the value of the publication to science generally, it was not excessive seen in the light of the present. Today it is a rare volume, eagerly sought by connoisseurs and scientific bodies. It was the second most important work on ornithology in America, "Birds of America," by John James Audubon, being the one more famous, and it was the costliest work on the subject ever published.

Hydrographer—Frederick H. Newell, of Bradford, Pennsylvania, noted engineer, hydrographer, and geologist, secretary of "Natural Geographic Magazine," and author of numerous scientific works.

Ethnologists—William Henry Furness, born in Wallingford, published "Folk Lore of Borneo," "Life in the Lucku Islands," etc. Frank Hamilton Cushing, native of North East, accompanied Powell's expedition to New Mexico, and settled among the Zuni Indians for the purpose of study; he also conducted excavations in Arizona in 1881, and in Florida, in 1895; connected with United States Bureau of Ethnology since 1897.

Ichthyologists—Tarleton Hoffman Bean, born in Bainbridge, Pennsylvania, October 8, 1846. Eminent ichthyologist. Editor of "Proceedings and Bulletins" of the United States National Museum, 1878-86, and of the United States Fish Commission, 1889-92; curator of the Department of Fishes in the United States National Museum, 1880-95. In 1895 director of New York Aquarium; 1899 director of forestry and fisheries of the United States Commission to the Paris Exposition of 1900. He published numerous valuable works on fishes.

Samuel Gorman, born in Indiana County, Pennsylvania, June 5, 1846. In 1873 assistant in herpetology and ichthyology in Cambridge, Massachusetts, Museum. He published "The Reptiles and Batrachians of North America," "Evolution of the Rattlesnake," etc.

CHAPTER VII.

MOUNTAIN, FIELD AND STREAM.

When the white man came to Pennsylvania he found woods nearly everywhere. Pennsylvania was all forested except a few natural meadows and several rough mountain tops. Tall majestic trees of many varieties welcomed the newcomers. Trees can live only where there is animal life, thus this primeval forest was a complex community of living things, throbbing with life day and night, winter and summer. Large shrubs, minute scarcely visible plants, beneficial as well as harmful animals, large and small—song and insectivorous birds, insects of many varieties, and wild game of many kinds—buffalo, elk, deer, bear, beaver, wild cat, rabbit, raccoon, mink, squirrel, wild turkey, grouse, partridge, pigeons, doves and many others made the woods a thriving community.

Mr. John M. Phillips, of Pittsburgh, who has done more than any other man to conserve the game animal and bird life of America, thus beautifully describes this community life:

In the work of policing, protecting and preserving the forests which stood here when Columbus arrived, birds and beasts served each in his sphere, performing a useful work for which the Great Spirit created him. Bears, the white-wings of the forests, tore to pieces rotten logs in search of grubs, ants, and other insects, tore out stumps to make room for new trees, scattering the fragments on the forest floor, where they disintegrated quickly and became fertilizer. The deer, elk, rabbits and other grazing and browsing animals destroyed weeds and pruned the trees, throwing the growth to the tops, making timber. Turkey, grouse and other birds destroyed ground insects. The woodpecker family policed the trunks and larger branches of the trees, while the large family of warblers and other species of small birds cleansed and protected the foliage. The squirrels planted nuts and the birds distributed seeds, while the industrious beavers built dams which conserved the water. To the birds and mammals we owe our forests and to the beaver the finest meadow lands in Pennsylvania.

We consider hunting a national necessity, since it trains men to take care of themselves in the outdoors and to become skilled with firearms, both of which factors are essential to our Nation in time of war. A sufficient amount of game must be produced to furnish the incentive to entice men into the great out-of-doors, where they can secure much needed recreation, and, at the same time, provide a national defense training which can be obtained in no other way. In the opinion of the Pennsylvania Game Commission, Pennsylvania's refuge system of propagating game in its natural habitat and environment, under absolutely natural conditions, with protection from hunters, vermin, and fires, is infinitely superior to any plan which involves the breeding of game in confinement. In fact, the Commission considered it a patriotic duty to bend all its energies and apply all its resources to the

conservation and perpetuation of our native and useful wild life, rather than to import from foreign countries, and at great expense, game birds and animals of doubtful value.

The protection and propagation of game and the protection of song and insectivorous birds by the sportsmen at their own expense, have resulted in great and lasting benefit to our Commonwealth. Hunting, especially of large game, takes our sportsmen far afield to meet and become acquainted with their fellow-citizens, to study and become familiar with the topography and resources of Pennsylvania, thereby making for better citizenship. The benefits derived from vacations so spent cannot be figured in dollars and cents.

Greatest of Game States—Pennsylvania is the greatest game State in the Union, and it has more game today than when William Penn received the charter for his great Province.

The mammals of Pennsylvania are grouped into six orders, namely: Marsupialia—opposums; Chiroptera—bats; Insectivora—moles and shrews; Carnivora—dogs, wolves, foxes, bears, minks, weasels, raccoons, skunks, otters, and cats; Rodentia—rats, mice, squirrels, woodchucks, beavers, porcupines, chipmunks, rabbits, and hares; and Ungulata—deer, elk, cows, horses, and pigs. According to the conservation program these creatures are classified as game animals, fur-bearing animals, and other animals.

Game Lands—On June 1, 1933, the area of the sportsman-owned game lands, including all lands for which title had passed to the Commonwealth, totaled 364,772 acres. In addition to this acreage 82,358 more were under contract for purchase and were being conveyed as rapidly as titles were found to be in condition satisfactory to the Department of Justice and as boundary line surveys were completed.

Game Refuges—The Pennsylvania system of game refuges and public hunting grounds is recognized throughout the United States as being unique. It has played an important part in successfully increasing game and providing lands where licensed hunters do not encounter "No Trespass" signs, and it holds the confidence and respect of the hunting population. These refuges were first authorized by act of Assembly of May 11, 1905, and were established within the State forests. The size was enlarged by acts of 1907 and 1911, and in 1915 the creation of game refuges on forest lands other than State owned were permitted. In 1919 an act, supported by the sportsmen, was passed, authorizing the Game Commission to purchase with money accumulated from hunters' license fees, forest lands for refuges near large centers of population, where there are no State forests. These refuges must be surrounded by free public hunting grounds, something fully as important to the sportsman as the refuge. This is the plan in every case, whether the refuge is located on State forest, sportsman-owned, or on leased lands.

The Board of Game Commissioners early realized that refuges on public lands, under control of the Forestry Department, would become a nuisance. The sportsmen were aroused, and desiring to perpetuate hunting, a movement was started for the right to purchase and own their own refuges and shooting grounds. In 1919 an act was passed allowing the Commission to use its surplus from the \$1.00 resident hunter's license fee for this purpose. Eleven separate tracts were promptly purchased.

An ideal refuge consists of about 10,000 acres, 3,000 of which is a sanctuary, which is surrounded by a fire lane and inclosed with a single waist-high marking wire, with suitable signs. The sanctuary is thus surrounded by the 7,000 acres of public hunting grounds. Owned by the sportsmen, the timber is not the main objective, so when necessary, the Game Commissioners can cut out patches of the shading trees to raise forage for deer and berries for other wild life. Trees can be cut in the winter, especially in making fire lanes, which provide deer with buds and twigs, and the tree trunks sold in the spring for mine props and other uses. Nut and fruit trees are planted and old abandoned farms are ploughed and planted to buckwheat and other grains and forage to hold wild life in the refuge and keep it from becoming a nuisance to farmers. The game quickly learns that it is safe in the refuge.

The game refuge is in charge of a refuge keeper, who lives on the tract and is furnished with a horse. His duties in order of their importance are to prevent and extinguish forest fires, destroy predators, guard the refuge against poachers and, in addition, feed game in the winter time and enforce the law within a fair riding distance. No one is allowed to camp at any time on the hunting grounds surrounding the refuge and hunting is only allowed for six weeks. Consequently, game breeds undisturbed during the closed season on the whole tract.

There are several notable private preserves in Pennsylvania. General Harry C. Trexler, of Allentown, maintains a 2,000-acre preserve near Siegersville, Lehigh County, in which are large and fine herds of buffalo, elk and deer. The Trexler fish hatcheries are also among the most successful in the country. Dr. Edward H. McCleery, of Kane, maintains the largest lobo wolf farm in the world. There are more than 100 fine specimens, nearly all of his own raising. There are other private preserves and nearly forty commercial enterprises. Pennsylvania boasts of about 1,000 conservation organizations, including sportsmen's associations, bird clubs, Audubon societies, etc. Over 600 of this number constitute sportsmen's organizations alone.

Beaver Colonies—Pennsylvania is a natural habitat for beaver. It is almost unbelievable that from one pair of beaver presented to Pennsylvania by Wisconsin in 1917, and an additional twenty-four pairs purchased from Canada in 1920, has grown a beaver population large enough that in 1932 drastic measures of control had to be adopted by the Game Commission. There are more than 1,000 occupied

beaver dams, nearly 175 beaver houses located in banks, and quite 5,000 beavers in Pennsylvania. More than 900 beavers have been trapped and either exchanged with other States for different kinds of game, or were restocked in more desirable areas in the Commonwealth.

Sportsmen Pay the Bills—Pennsylvania also enjoys the distinction of being the only political sub-division in the world whose sportsmen contribute jointly and equally toward the acquisition of the lands for the propagation and the hunting of game, as well as for the production and conservation of fish and the protection of our forests. This unselfish policy of sportsmen-owned lands is an accomplishment of which every lover of the out-of-doors is justly proud. The term “unselfish” is used advisedly, for the hunter of Pennsylvania today is not only purchasing something for his own use, but generously providing a marvelous inheritance for the future. He is not only financing his own sport, but investing a certain percentage of his annual donation, in the form of a license fee, for lands which will be an increasingly valuable asset to hunters of future generations. Lands already purchased and those to be acquired by future purchase, will increase in value from year to year as the timber grows, as they are protected from fires and other damage, and are made more and more the natural habitat for wild life. The crop of game is thus assured by the development of the present excellent refuge system. There were eighty-four refuges, June 1, 1933, each one located in forest areas where game naturally abounds. More than forty counties now have State game lands within their borders, and the resident hunter pays the bill. All funds expended by the Game Commission for the acquisition of game lands comes from the license fee of the resident hunters. No part of the non-resident hunters’ license fee or other income of the Commission is specifically designated by law for such purposes. The value of the State game lands and buildings on June 1, 1933, was estimated to be worth nearly \$2,000,000.00.

Propagation of Game—In the important work of propagation Pennsylvania likewise leads. State game farms have been established and experiments are conducted at Pennsylvania State College and other places. The John S. Fisher State Game Farm, located near Schwenksville, Montgomery County, and the Charles G. Jordan State Game Farm, located near New Castle, Lawrence County, are devoted principally to the propagation of ring-neck pheasants, and the distribution of their eggs to interested citizens and sportsmen’s organizations. Through the liberality of the DuPont Powder Company an entire equipment for propagating the bob white quail was given to the Game Commission, and by them set up at the Fisher Game Farm. This gift included a large incubator, electric brooders, valuable supplies and some fine quail. The success of this installation is most praiseworthy and satisfactory. The State Wild Turkey Farm, in Juniata County, is located in the heart of the wild turkey section of the Commonwealth. In addition to the estab-

lished State game farms, the propagation of ring-neck pheasants, quail, and rabbits has been actively carried on at more than thirty of the State game refuges.

Distribution of Game—During the biennium of 1931-32 the Game Commission distributed 91,372 ring-neck pheasant eggs to sportsmen and farmers. During this same period the Commission expended \$163,309.34 for the purchase of game, which included rabbits, hares, Reeves pheasants, ring-neck pheasants, quail, Hungarian partridges, wild turkeys, raccoons, fox squirrels, and pheasant and quail eggs. In addition to these purchases much game has been donated to the Commission for propagation and restocking purposes. The Reeves pheasant is a beautiful bird introduced into the United States only a few years since as a possible game bird, especially in the wooded sections where the ring-neck pheasant will not stay. Reports received where these birds have been released are not encouraging from a sportsman's viewpoint.

Training the Field Force—Pennsylvania maintains the only training school for field officers in the country. This school is located in Jefferson County, and was first opened in 1932. It is proving the wisdom of its originators by the quality of the work done in the thorough training of the field force in the conservation of the wild life resources of the Commonwealth.

Leads in Game Kill—Pennsylvania stands preëminent among the game States in the annual game kill, conservation of game and fish, and in fish production. One-sixth of all the active sportsmen's organizations in the United States are in Pennsylvania; one-seventh of all licenses issued in the Union are issued to Pennsylvanians, and one-tenth of the total revenue from licenses is collected in this Commonwealth. Our laws upon the subject are the envy of other States, nineteen of which have sent representatives to learn our setup. A total of nearly 9,000 hunters from twenty-four other States and two foreign countries took out non-resident license to hunt in Pennsylvania in a single season. These came from as far west as California and Oregon, as far south as Florida, and as far north as Vermont. Three thousand three hundred fifty-five were from New York, 2,740 from Ohio, 1,704 from New Jersey, and 347 from Maryland.

The game kill for 1930 and 1931, despite a restricted season and bag on some species, will serve to reveal the magnitude of the hunting possibilities of Pennsylvania. The figures for these two years are as follows:

<i>Kind</i>	<i>Season of 1930</i>			<i>Season of 1931</i>	
	<i>Weight of Each</i>	<i>Number</i>	<i>Weight</i>	<i>Number</i>	<i>Weight</i>
Elk	450 lbs.	5	2,250 lbs.	1	450 lbs.
Deer, Legal Males	120 "	20,115	2,413,800 "	24,796	2,975,520 "
Deer (Antlerless)	90 "	5,979	538,110 "	70,255	6,322,950 "
Bear	200 "	707	141,400 "	501	100,200 "
Rabbits	2 "	3,068,910	6,136,038 "	3,100,000	6,200,000 "
Hares (Snowshoes)	4 "	20,602	82,408 "	26,245	104,980 "
Squirrels	1 "	456,523	456,523 "	551,844	551,844 "
Raccoons	12 "	48,190	578,280 "	21,650	259,800 "

Kind	Weight of Each	Season of 1930			Season of 1931		
		Number	Weight		Number	Weight	
Wild Turkeys	12 "	2,374	28,488 "		4,038	48,456 "	
Ruffed Grouse	1½	83,787	125,680 "		170,369	255,554 "	
Ringnecked Pheasants	3¾	251,362	942,607 "		294,441	1,104,154 "	
Bobwhite Quail	6 oz.	152,958	57,363 "		115,552	43,332 "	
Woodcock	6 "	46,489	17,434 "		31,650	11,869 "	
Shorebirds	6 "	24,913	9,342 "		16,600	6,225 "	
Blackbirds	3 "	250,035	46,882 "		122,374	22,945 "	
Wild Waterfowl	3 lbs.	63,784	191,352 "		18,320	54,960 "	
Total weight			11,767,954 "			18,063,239 "	
Reduced to tons, equals.....			5,884 tons			9,032 tons	

Black bears were first protected by act of 1905, when Pennsylvania became the first State to recognize black bears as creatures relatively harmless, yet at the same time thrilling as a game animal. The legal kill of bears in Pennsylvania in one season recently exceeded the total bear kill in all the other forty-seven States of the Union for that year.

These figures may be taken as accurate for Pennsylvania again leads in this matter of collecting data. A system of "game killed report" has been developed by which an act of Assembly requires each holder of a license to hunt to promptly report his game kill. These annual compilations reveal the enormous value of the kill, which in 1931 alone amounted to \$10,572,365.50. The aggregate value of the fur-bearing animals, not included in the above valuation, in that year exceeded \$2,500,000.00.

How It All Came About—This enviable position of Pennsylvania among the other game States of the Union was not earned in a single decade, or by any accidental turn of affairs. In the closing years of the last century the sportsmen of Pennsylvania became alarmed at the rapid disappearance of wild life throughout the Commonwealth and awoke suddenly to the realization of their duty. If the beneficent wild life was to be saved for this and future generations, immediate action must be taken to secure adequate protection and preservation.

Far-sighted sportsmen and conservationists recognized this situation, assumed the leadership and took the initiative in saving for posterity the remnant of the wild life they had enjoyed. Among them were Hon. John M. Phillips, Dr. Charles B. Penrose, Dr. Joseph Kalbfuss, and the Pennsylvania State Sportsmen Association, which at this early day was composed and officered by genuine sportsmen, and devoted much of its energies to game conservation, not only that of holding an annual target tournament. Through the combined efforts of these conservationists the Game Commission was created by act of 1895, the first step in the long program. This original commission was to consist of six citizens, appointed by the Governor, without any political significance, who were to serve without pay or even their necessary expenses. William M. Kennedy, former mayor of the city of Allegheny, became the first chairman and Dr. B. H. Warren, of West Chester, the secretary. Dr. Kalbfuss became the secretary in 1898, and served until his untimely death, a

period of nearly a quarter of a century. Many years of this service were given without pay, even the game protectors served for years without pay, except that they were given one-half the fines assessed against law violators. This lack of funds made many enemies for the Game Commission; in one year fourteen game protectors were shot at, seven hit, and four of whom were killed.

In 1900, during a hunting trip near Yellowstone Park, Mr. Phillips noted that wild life, especially the grizzly bear, when hunted sought sanctuary in the park, and realized that if it were not for the park our large western mammals would soon become extinct. Consequently, he became a strong advocate of refuges surrounded by public shooting grounds, not only for Pennsylvania, but throughout America, which refuge policy was adopted by Pennsylvania in 1905.

In 1905 Mr. Phillips became a member of the Commission and subsequently its president. Through his most unusual experience and untiring efforts the work was advanced at an amazing rate. Increased appropriations were made by the General Assembly; fundamental laws were enacted, among them the prohibiting of unnaturalized foreign-born residents from possessing firearms and dogs, the prohibition of automatic guns in hunting, the buck law, a closed season on bear and the protection of cubs, prohibiting the sale of rabbits killed within the State and placing a bag limit on them, limiting the time of training hunting dogs, and prohibiting the sale of all game.

The first resident hunters' license fee law was passed and signed by Governor John K. Tener in 1913; the funds were to be set aside from other State monies. In 1923 the license fee was raised to \$1.25, but the additional sum was to be used in the printing of license tags and other expenses of the Commission. The most important work of Mr. Phillips was to see that the funds from the unexpended balance of the license fees was used exclusively by the Game Commission for the purchase, propagation and protection of game and payment of bounties for noxious animals. Pennsylvania thus became the first State to authorize the special use of the sportmen's money for game purposes.

The defeat of the proposed Amendment to the Constitution for \$25,000,000 bond issue for the purchase of forest lands was most welcome to the citizens and sportsmen, and the more than a half million Pennsylvanians who annually hunt have the satisfaction of owning their own land and maintaining it in their own way. The most beneficial legislation in the history of game in Pennsylvania was enacted during the year 1927, when, through the leadership of Mr. Phillips, the resident hunters' license fee was raised to \$2.00, and Governor Fisher signed the act, which set aside seventy-five cents of each fee to be used exclusively for the purchase and maintenance of game refuges and public shooting grounds. This sum exceeds \$400,000.00 annually.

In 1905 the General Assembly appropriated from the general fund \$10,000.00 for the use of the Commission. From 1913 to 1927 the sportsmen have contributed

about \$400,000.00 yearly, and since 1927 about \$1,250,000 per year for the perpetuation of their sport.

Through conserving the forests, water, fish and game, together with song and insectivorous birds, and providing the public hunting grounds at their own expense, Pennsylvania sportsmen have become not only self-supporting, but a great asset to the Commonwealth. They have made history and set a mark for the sportsmen of the world to shoot at.

State Bird—By a recent act of the General Assembly the ruffed grouse has been chosen as the State bird of Pennsylvania, and no more popular selection could have been made. The ruffed grouse is the gamiest of all the woodland game birds, and possesses many of the most desirable characteristics of bird life.

The ruffed grouse, *Bosasa umbellus umbellus*, is sometimes called a partridge and a pheasant. The rocky wooded hills of nearly every county of Pennsylvania are the favorite haunt of the grouse. In winter it seeks shelter in valleys and swamps under the protection of thickets or coniferous trees. At times it goes far afield, but almost always it keeps within easy reach of cover. They are distinguished by their crested head; a wide, partially concealed ruff on each side of the neck, capable of erection; toes usually naked; tail of square-tipped feathers;



plumage thick, soft and handsome, but gay colors are absent. They seek food principally and nest wholly on the ground. From seven to fifteen eggs are laid. The female steals away and makes her nest, apparently hiding it from the male.

The cock grouse treading his native forest floor is a sight to gladden the eye. With crested head erect and carried high, with bright and banded tail held clear and widely spread, he throws forward his proud head, and steps lightly along, raising his feet well up, moving over the inequalities of the ground with a gently undulating motion, his broad tail raised or lowered at will, his dark eye flashing on all around him; his frame instinct with electric life and vigor drawn from the rugged hills. He is truly the king of game birds, and has no superior among the grouse in other parts of the world.

In the early spring the drumming of the male grouse is one of the every-day sounds of the forest or thicket, and is heard even after the breeding season. This thrilling sound of the cock grouse while standing on a log, stump, or rock, is produced by the wings, and probably by the concussion of swift blows upon the air, although the wings seem to strike against the feathers of the breast. This drumming sound has to do with the mating season; it denotes virility and combativeness, at once a call to the female and a defiance to rival males, and often results in a meeting of the sexes or a fight between two cock birds. At other seasons the action

is mainly an expression of extreme virility and vigor of the male. The ruffed grouse is a hardy bird. It can stand extreme cold and privation, and can subsist, if need be, on twigs and dead leaves. Their pectinated toes serve as snowshoes to bear their weight on the lightest crust of snow or on packed drifts.

The destruction of our great forests, the use of woodlands for grazing purposes, and the prevalence of forest fires, all have had much to do with the decrease of this game bird. Forest fires in the spring kill many females on their nests, and at any season of the year great fires seem to attract the grouse, as they have been seen to fly directly into the burning woods.

As a game bird the ruffed grouse is a favorite of sportsmen wherever it is found, especially is this true in Pennsylvania. No other bird can ever be so popular. The flesh is exceedingly fine for eating, and on account of its insect food the grouse must be classed among the useful species of bird life. Pennsylvanians are proud to accept the ruffed grouse as its official State bird.



National Bird Day—The National Bird Day had its origin in Pennsylvania. In the early 'nineties Charles A. Babcock, superintendent of public schools in Oil City, Pennsylvania, had his attention called to the interest the pupils of the public schools of that city displayed in that part of nature studies relating to bird life. He noticed the diligent work to excel in accuracy of description, appearance, habits, and characteristics of the birds common to the locality. Mr. Babcock wrote to a number of ornithologists and asked them to write something for the children of the community, and asked them for an opinion as to the advisability of observing a bird day in the public schools. Many of the replies were very encouraging.

Mr. Babcock was convinced that such a day would be of great educational value to the boys and girls of school age. As a result, in May, 1894, the first "Bird Day" in America was observed at Oil City. The movement proved to be popular, the United States Department of Agriculture and the National Association of Audubon Societies were alert to advantages that would accrue from the general observance of such a day. Today every State observes a National Bird Day.

Fish—Fishing in Pennsylvania is under the control of the Board of Fish Commissioners, an independent administrative body, consisting of the Commissioner of Fisheries and seven other citizens of the Commonwealth appointed by the Governor. The first Commissioner was William E. Meehan, commissioned June 2, 1903, who was succeeded by Nathan R. Buller, August 5, 1911, who was succeeded by Oliver M. Deibler, the present incumbent, January 20, 1931.

The Commissioner is the president of the Board, also the executive officer and chief superintendent of all the hatching stations and fish cultural establishments belonging to the Commonwealth. The primary duty of the board is to enforce the

fish laws, through the aid of fish wardens appointed by the board. The board has control over the hatching stations and fish-cultural establishments and is authorized to make free distribution or planting of the fish produced in such hatcheries, first, to the public waters of the Commonwealth and to the waters within the forestry reserves; second, to public school authorities for educational purposes, or for scientific research, and to persons applying for fish culture for aquarium purposes and show ponds; third, to fish associations and individuals to stock any stream, lake, or pond in which the public are permitted to fish. Fish licenses are issued under the supervision of the Department of Revenue.

The real and ever-present menace to successful fishing, other than for trout in the mountain streams, is the pollution of the waters of the Commonwealth. Numerous times during each year the fish life is destroyed in great numbers and the waters rendered poisonous also to human life. Efforts are made to ascertain the source of the pollution, but nothing is ever done to check the crime, and fishing in the rivers of Pennsylvania is passing away as a source of food supply or for sport.

The most valuable fisheries of Pennsylvania are the shad and sturgeon fisheries of the Delaware. The Susquehanna, once famous for its shad, has been depleted by the employment of fish baskets, the building of large power dams, and other injurious and wasteful practices. The catch of shad in the Delaware averages in value \$500,000 a year; that of the Susquehanna does not exceed \$30,000 in the best years. The myriads of mountain streams are excellent for trout fishing, and are regularly stocked with brook and brown trout. Other streams are stocked with bass, perch, sunfish, catfish, pike, cisco, pickerel, suckers, minnows, and frogs, and Lake Erie is stocked with fish suitable to its water. The total number of fish distributed to the streams of every county in the Commonwealth in 1932 was 608,383,466, which had a value of \$791,170.68.

The hatcheries belonging to the Commonwealth are located as follows:

Wayne County Fish Hatchery, Pleasant Mount, Wayne County; State Fish Hatchery, Erie; State Fish Hatchery, Corry, Erie County; State Fish Hatchery, Union City, Erie County; State Fish Hatchery, Bellefonte, Centre County; Torresdale Fish Hatchery, Holmesburg, Philadelphia; Reynoldsdale Fish Hatchery, Reynoldsdale, Bedford County; Tionesta Fish Hatchery, Tionesta, Forest County; State Fish Hatchery, Huntsdale, Cumberland County.

CHAPTER VIII.

EDUCATION IN PENNSYLVANIA.

There is no more interesting story of Pennsylvania than that of education and its development. Nowhere else in the British American Colonies is the writing of this story more difficult, for in none of them was there such an heterogeneous admixture of national, religious, social, and political elements as came here to help William Penn establish his "Holy Experiment." These people came in groups and here this group freedom became the great ideal. Each group was free to work out its own development in almost any manner that it chose. These groups came here to escape the despotism and tyranny of their home lands, and each wanted to be let alone, to order its life in terms of its own responsibilities and by striving earnestly and conscientiously toward that end. The nearest approach to unity among these groups was through their religious zeal and industry, for they were backward as political leaders, and it took a long while for these people to realize their responsibility to the State or to provide adequate educational opportunity for their children.

William Penn, upon landing on the shores of the Delaware, found a number of small villages on both sides of the river inhabited by different nationalities, mainly Swedes, Dutch and English. Even the great Penn did not expect to find organized schools and skilled teachers for this mere handful of people in a wilderness three thousand miles from home and help who had to win the battle for existence before they could give much attention to the arts that cultivate and refine.

The educational policy existing in the countries from which these pioneer settlers came differed very much. At the time the first Swedish colony was planted on the Delaware there was no regular system of public education in Sweden, but the church was active in its efforts to educate the young, and home instruction was general. Holland was, without doubt, the first country in Europe to establish a system of public schools, similar to those now known by that name. Nothing had been done in England in the direction of general education as early as the beginning of the seventeenth century. Even the far-famed parish schools of Scotland were not established until 1695, when it was enacted that "a schoolmaster should be appointed in every parish by the advice of the Presbyteries."

Among the instructions to Governor Johan Printz was included the Christian instruction of the colonists, especially the young. Provisions were made for the establishment of schools and churches among the Indians, and in the Charter of Freedoms, Privileges and Exemptions, the patroons were admonished to find means to maintain clergymen and schoolmasters.

When the Dutch came into control, New Castle was ordered, July 12, 1656, among other things, "to erect a house for a school which can likewise be occupied by a person who will hereafter be Sexton, Psalm Setter and Schoolmaster." In

accordance with these stipulations, Evert Pietersen was sent out with a body of emigrants the same year, to act as schoolmaster, to read God's word and lead the singing until the arrival of a clergyman. He came in the capacity of "schoolmaster, comforter of the sick, and setter of psalms," and sought twenty-five pupils.

It has been claimed that the Dutch at Manhattan established schools as early as 1633, and supported them at public expense. There is no record, however, to show the existence of a schoolhouse in the colonies on the Delaware up to the year 1682. It is not likely there was a single one in the whole country.

The earliest official record of a schoolmaster in the present limits of Pennsylvania is found in the court records of Upland, March 22, 1679, and given in Hazard's "Annals" as follows: "E. Draughton sues Dirck Williams for his bill for teaching defendants' children one year, 200 guilders. A witness, who heard the agreement made, testifies that E. Draughton was to teach Dirck Williams' children to read the Bible, and if he could do it in a year, or half a year, or a quarter of a year, he was to have 200 guilders; judgment for plaintiff."

The foundation of Pennsylvania educational institutions was not delayed even by the formalities of making a new province after William Penn landed at Upland, late in October, 1682. Education received early consideration in the first "Frame of Government" which was drawn up in England by Penn, and agreed to on April 25, 1682, before he prepared to depart for Pennsylvania.

In that document it is clearly set forth that education was the function of the civil authority, though the intentions of the Founder were not realized fully for more than one hundred and fifty years. Penn's ideals of popular government are thus expressed: "Any government is free to the people under it, whatever may be its frame, when the laws rule, and the people are a party to these laws, and more than this is tyranny, oligarchy or confusion." The same idea is present in each of the two Frames of Government drawn up by Penn and the one under Governor William Markham, November 7, 1696.

The original frame contained such stipulations that give us the impression of the Quaker ideal of education. The tenth provision was that the Governor and Provincial Council should erect and order all public schools and encourage and reward the authors of useful sciences and laudable inventions. The following provision directed that these officials should "have the care and management of public affairs relating to peace, justice, treasury, and improvement of the province and territories, and to the good education of the youth, and sobriety of the manner of the inhabitants therein."

The plan for education as thus set forth was not destined to be the one followed consistently for a century and a half, though throughout the first decades the relations between the school of the Friends and the governing Council were very close. It is significant, however, that the first school was actually ordered by the Council, in keeping with Penn's provisions.

One year after Penn's arrival the educational problem came to the attention of those in authority, and received decided recognition, when the following was

adopted, October 26, 1683: "The Governor and Provincial Council having taken into their serious consideration the great necessity there is of a schoolmaster for the instruction and sober education of the youth in the town of Philadelphia, sent for Enoch Flower, an inhabitant of said town, who for twenty years past has been exercised in that care and employment in England, to whom having communicated their minds, he embraced it upon the following terms: to learn to read English 4s by the quarter, to learn to read and write 6s by the quarter, to learn to read, write and cast accounts 8s by the quarter; for boarding a scholar, that is to say, diet, washing, lodging and schooling, ten pounds for one whole year."

Flower opened his school in a dwelling built of pine and cedar planks. This was the first regular English school in Pennsylvania, and it was opened by Schoolmaster Flower on October 30, 1684. Thus the first impetus to education in Pennsylvania came through constituted governmental authority.

The school conducted by Enoch Flower continued for some years, in fact until after the Friends had determined to establish a school to meet the demands of rich and of poor. This school was set up under George Keith, who was engaged at a salary of £50 a year, the use of a house, and the profits of the school for one year, to open a grammar school in Philadelphia. Here the children of the poor were to be taught gratis. This was a flourishing school, and in the second year Thomas Makin was hired as usher to assist Keith, and John Cadwalader came to Philadelphia in 1699 and was employed as an assistant to Makin. This "Friend's Public School" has been continuously in operation to the present time and is known as the "William Penn Charter School." The earliest charter, procured in 1697 by Edward Shippen, David Lloyd, John Jones, Samuel Carpenter, Anthony Morris, James Fox, William Southby and others has been lost, but the originals of others, dated 1701, 1708, and 1711, are preserved in the school, while duplicates are in the office of the Secretary of Internal Affairs in the State Capitol.

Darby became the seat of a school in 1692, and one was established in Germantown in 1701, with the learned Pastorius as its head. The well-known Abington Friend's School, near Philadelphia, dates from 1702.

Notwithstanding that Penn's earliest papers exhibited a very keen interest in education and his intention to incorporate public education as one of the duties of government, the Charter of 1701 contains no provision relating to education as did the former ones, and for more than half a century nothing appears to have been done by the authorities to provide educational facilities for the people.

The distintegrating forces that flowed into Pennsylvania may be traced to the sects, who believed that the best method of holding its own people together, propagating its doctrines, and spreading its faith was by the education of the youth in the tenets of its belief. This would be done if the education was left to the church and local units.

Historians do not agree as to the attitude of the Quakers toward education. Woody says they placed great emphasis on moral and religious training, that edu-

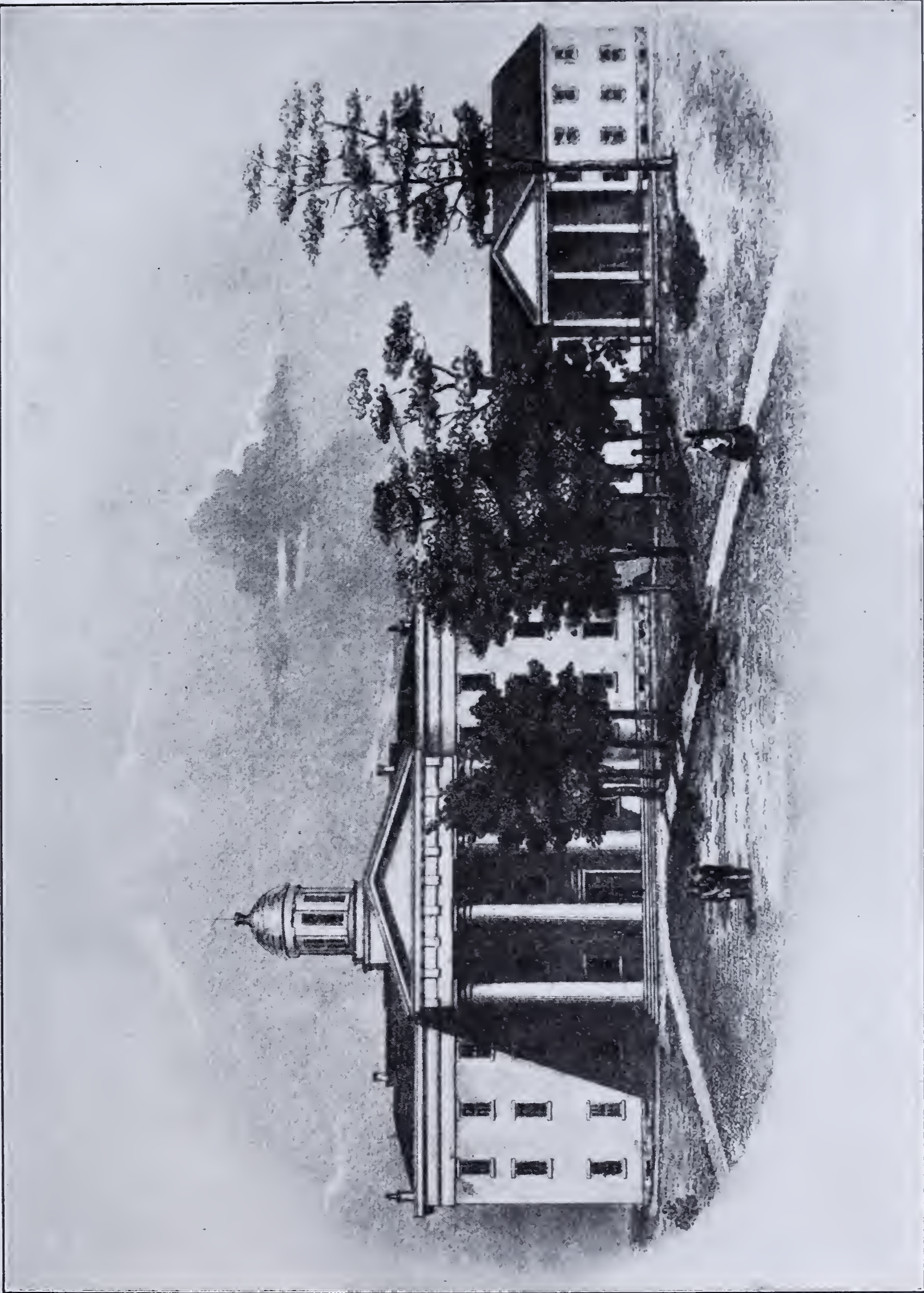
cation should be of practical value, and that they believed that Negroes, Indians and the poorer classes of society should be given such an education; Proud says that every Quaker boy or girl must be able to read and write; Wickersham said "that it has scarcely ever been possible to find an illiterate member of their Society." Other historians make the statement that the ideas of the Quakers on the subject of education were not exalted; Fisher says: "It was strange that the Quakers, after having freed themselves from dogma, should get into a state of mind that despised high learning."

The general attitude of the Quaker was in favor of elementary education, moral training, and vocational instruction and they favored equal education for both sexes.

The first school mistress in Pennsylvania was a Quaker, Olive Songhurst, who was first hired in 1702. The first great advocate of Negro freedom and Negro education was the Quaker John Woolman. The first Negro school was not opened until 1771, with Moses Patterson the teacher. Anthony Benezet took charge of this school in 1775, and removed it to his own house. That the Quakers of a later day did not oppose higher education is shown in the founding of Haverford, Swarthmore, and Bryn Mawr colleges.

The establishment of Christ Church by the Episcopalians in Philadelphia in 1695 was quickly followed by a school, and quaint old St. Joseph's Church, built in 1730, at once established a parish school. Other schools were established at Chester, Marcus Hook, Radnor, Pequea, and at other places. The Baptists, whose first church was established at Cold Spring, Bucks County, in 1684, also founded schools, although the earliest record only dates back to the schoolhouse of Lower Dublin Church in 1732. The Presbyterians were active in school work, a law enacted by the Scottish Parliament in 1695 provided that "there be a school founded and a schoolmaster appointed in every parish by advice of the Presbyteries," a custom that appears to have been generally followed in Pennsylvania. The most noted Presbyterian school was the academy established by Rev. William Tennent, on the Neshaminy, in Bucks County, in 1726, and popularly called "Log College." The academy at Canonsburg founded by Scotch-Irish became Jefferson College and one at Washington, Washington College. These two had prosperous careers until the Civil War, after which they were united as Washington and Jefferson College at Washington. The Roman Catholics have never changed or departed from the idea that education should be a function of the church and home. There were few Catholics in early Pennsylvania. The most important of the early Catholic schools was established in 1731, in connection with the mission at Goshenhoppen. It is not known that the Methodists had a parochial school in Pennsylvania. The Friends established a famous school at Westtown in Chester County during this period.

The leader of the first large group of Mennonites to Pennsylvania was Francis Daniel Pastorius, one of the most learned men of his time. He was a graduate of several European universities, a linguist, lawyer, author, scientist, pietist, and suc-



Washington College, 1850

cessful colonist. Besides his duties in the administration of the affairs of the Menonites he was a schoolmaster. As early as 1696 he taught school in Philadelphia for it is recorded that he made an engagement with Friends at this date "to keep school in the city and to do their writing." In 1698 he taught the Friends' Public School, and in 1701, he says, "it was found good to start a school here in Germantown." He charged for the instruction of a child at the rate of four pence per week. He wrote the first Pennsylvania school book and William Bradford printed it. He also wrote many other important treatises, and several volumes were left by him in manuscript, containing philosophical reflections, poems, notes on theology, medicine, and law. Whittier, in "The Pennsylvania Pilgrim," represents Pastorius as one of great personality, although eccentric to an unusual degree. He was not a dreamer, but an active, vigorous, spiritual, and learned leader of a people who loved him.

No church or sect was more active in education than the Moravians, and schools were established at Germantown, Nazareth, Bethlehem and Lititz. Christopher Dock, "the pious schoolmaster of the Skippack," taught a Moravian school in Germantown, and is the author of the first book on school teaching published in America.

Fisher, in "Making of Pennsylvania," says: "The Germans, unfortunately, stand in the history of Pennsylvania as the enemies of all attempts at good education. There was great difficulty in introducing the public school system among them, and in some cases it was resisted by indignation meetings and litigation. Many of them professed to consider it tyranny, and attempted to pose as martyrs by refusing to pay the school tax, and allowing their property to be taken by the sheriff."

Much of this trouble was because the Germans did not better understand the English language; the mass of the early German settlers were reasonably well educated themselves and were not opposed to public education. There are more educational institutions today among the German than any other of the peoples who make up our great citizenship. These colleges are under church control: Albright, Cedar Crest, Elizabethtown, Franklin and Marshall, Geneva, Gettysburg, Juniata, Lebanon Valley, Lutheran Theological, Gettysburg, Lutheran Theological, Philadelphia, Moravian College and Theological Seminary, and Moravian College for Women, Muhlenberg, Schuylkill, Susquehanna, Theological Seminary of Reformed Church, Thiel, and Ursinus, more than one-third of the total number.

During the sixty years following the establishment of Keith's school there was no attempt made to start schools that would be free to all and not marked by the distinction between the rich and poor children. This democratic principle was not clearly formulated and advanced until it was taken up by Benjamin Franklin, which resulted in the establishment, in 1753, of the future University of Pennsylvania. Prior to that time most of the schools in the province were conducted either under strictly private auspices or under the patronage of religious denominations.

The University of Pennsylvania, one of the oldest educational institutions in America, had its origin in an unusual situation, the preaching of the great George Whitefield. When that eloquent itinerant preacher, on his second visit to Philadelphia, occupied the pulpit of Christ Church, and preached to crowds of 6,000 standing before the courthouse gallery, and other great assemblages, Franklin figured that the city of Philadelphia should erect a building where such visiting preachers could be heard, and should also provide a school in which the poor children could be taught reading, writing and arithmetic. This Whitefield structure was called "The New Building" and it became the home of the parent school of the University of Pennsylvania. The building was one hundred by seventy feet in size and built of brick. Franklin said it was "very strong and sufficiently high for three lofty stories." Later it was reduced to two stories and so remained until 1846, when it was destroyed.

Franklin was most active in establishing this Charitable School, as it was called, but he had in mind a broader and bigger school. He drew up a proposal, in 1743, "for establishing an academy," but the threat of a war with Spain forced a postponement of the project. In 1749 he successfully renewed it. He won the prominent men of the city, including James Logan, and a meeting held December 26, 1749, was well attended. Franklin prepared a list of twenty-four trustees headed by James Hamilton, afterwards twice Governor, William Allen, Tench Francis, William Shippen, Thomas Bond, William Coleman, William Masters and other men of mark.

In a letter dated June 28, 1750, Franklin wrote: "We are going on with our building for the Academy, we propose to have an observatory on the top." Franklin and Tench Francis journeyed to Stratford College, to persuade Dr. Samuel Johnson to come to the academy. He refused, but suggested a younger tutor, William Smith, an Aberdeen man and scholar. The latter came and became the first provost. The academy was opened in the presence of a distinguished assembly of citizens on January 7, 1751. Rev. Richard Peters preached the opening sermon. The academy was at once a pronounced success and on July 13, 1753, a charter was obtained from Thomas and Richard Penn for "The Academy and Charitable School."

Two years later, May 14, 1755, an additional charter for the "College of Philadelphia in Pennsylvania" was granted. During the Revolutionary War the Assembly dispossessed the trustees of their charter, privileges and rights, by act of November 27, 1779; these were restored by act of March 6, 1789.



Rev. William Smith

The College, Academy and Charitable School of Philadelphia and the University of the State of Pennsylvania were united under the title of the "University of Pennsylvania," by act of Assembly of September 20, 1791, and has functioned as such to this day.

In addition to being the first academy and college in Pennsylvania, the first hospital was established here in 1755 by Benjamin Franklin. The first school of anatomy was founded by William Shippen, in 1762, and three years later Dr. John Morgan founded the first medical college in America as a branch of the College of Philadelphia. The first medical society was formed in Philadelphia in 1768, and the first college of physicians in 1787.

The first law school in America was established when the initial law lecture was delivered by Judge James Wilson, in College Hall, December 15, 1790, in the presence of President and Mrs. Washington and a distinguished assemblage. The University of Pennsylvania also boasts of the first laboratory in the United States for the instruction in chemistry; the first group to fight against tuberculosis by intensive research; the first school of hygiene and public health; and the first department of research medicine. The University of Pennsylvania is not only the oldest institution of higher education in Pennsylvania but has become one of the largest and most important in all of America.

The State Constitution of 1776 provided that "a school or schools shall be established in each county by the Legislature for the convenient instruction of youth with such salaries to the masters paid by the public, as may enable them to instruct youth at low prices; and all useful learning be duly encouraged and promoted in one or more universities." This action was not in advance of the church and community schools. It was not even as definite as Penn's Frame of Government of almost a hundred years before. Both classes of schools had always striven to reach people of moderate circumstances. Nor had the Province done anything for general education for fifty years previously.

An act approved April 7, 1786, appropriated lands for the endowment of Dickinson College, at Carlisle, and set aside 60,000 acres for the endowment of public schools. The lands, however, seem afterwards to have been appropriated to county academies.

The Constitution of 1790 provided for free schools and for the instruction of the poor gratis. This was brought about by Timothy Pickering, of Luzerne County, supported by Thomas McKean, of Philadelphia, and William Findlay, of Westmoreland, and others, who succeeded in getting the words—"in such a manner that the poor may be taught gratis"—attached to the clause on schools. On these words rest the system of common schools; for, in order to teach the poor gratis, it was finally determined to also teach the rich gratis. This provision was copied verbatim into the Constitution of 1838, and remained the only constitutional provision for education until the Constitution of 1873 went into operation.

The first act of the General Assembly looking to free education was approved by Governor McKean, March 1, 1802. Owing to the lameness of this law it

remained a dead statute so far as some of the counties of the Commonwealth were concerned. Other acts intended to correct these defects and to extend the public schools in each county were passed in 1804, 1809, 1812, 1818, 1822, 1824, and 1826. Many of these laws were also inefficient. The law of 1802 was the first pauper school legislation. The children who were taught gratis became known as "pauper scholars," and were ashamed to go to the "pauper schools," while the "pay scholars" were too proud to go. The first act which gave some hint of a general public school system was the act of 1824, but no effort was ever made to put this act into force, and it was repealed in 1826.

Philadelphia was created the first school district of Pennsylvania in 1818, and the city and county of Lancaster were made a separate district in 1821.

The movement which led up nearest to the present free schools was Lancasterian system, which was a scheme by which the poor could be taught at a very low expense. This system, named after Joseph Lancaster, an Englishman, and devised by him in London, embraced the monitorial method of instruction, by employing the older and more advanced pupils as monitors to instruct the others.



Typical College Building

The system was tried in Philadelphia with such satisfactory results that the General Assembly passed an act in 1818, establishing public schools in that city, in which it was to be used in its "most approved state." Lancaster himself came to Philadelphia to carry the law into effect. The system flourished for a time. In March, 1824, an act was passed providing for the extension of the Lancasterian system to Cumberland, Dauphin, Lancaster, and Allegheny counties. Monitorial schools were also opened at Milton, Erie, New Castle, Greencastle, and probably a number of other places.

The pupil-teacher, trained under the eye of an experienced master, was better than the pedagog of colonial times. They gave vision of free universal education, and at an extremely low cost, about one-tenth the previous amount, and there were some practical features in the system that have persisted and are found in the schools rooms of the present day. In spite of the optimistic hopes of its supporters these schools failed to work the transformation that was expected and by 1840 they had practically disappeared.

The fight for free schools may be seen in the frequent references to free education which occur in the messages of the Governor prior to 1834. The population was largely rural, without means of communication or transportation. There were only a few canals, the roads were few and miserable, and railroads were just beginning. There was but little social intercourse. There was also another revolution which was changing the normal conditions, occasioned by the industrial development, as we were rapidly becoming a home manufacturing people. Educated and able men found many fields open to them, and new demands were constantly arising. None appreciated the advantages of education more than skilled labor, and organizations of working men were among the first who took a definite stand for free education.

Governors Snyder, Findlay, Hiester, and Shulze had served as Chief Executives from the time of the pauper law of 1809 to the inauguration of Governor Wolf. All except Findlay were of German descent, but each in turn condemned the act of 1809 and asked that Pennsylvania assume a greater responsibility in the matter of education. Governor Shulze said that "liberty without knowledge is but a poor blessing." This long agitation began to bring results. It was time that a system of true public education should be adopted to put Pennsylvania upon a level with the other Northern States. "Difficult as the task may be, it is not insurmountable," said Governor George Wolf, in his first message to the General Assembly in 1831. The Governor himself had been a teacher and he knew the needs of "universal education," as he phrased it. Again he addressed the Legislature in 1833 when, he urged upon the members as their "solemn duty" that "the character of our State should be redeemed." The message had strong effect. Samuel Breck, of Philadelphia, had gone to the State Senate chiefly to assist in the cause of education. He was made chairman of the Committee on Education. Soon as he learned that the Governor had no idea how his scheme of "universal education" was to be put into operation, Senator Breck set himself to the task. With the aid of Reverend George Junkin, president of Lafayette College, and a few other able men, he prepared a school bill which passed in March, 1834, with only four votes against it, and became "An Act to Establish a general system of education by common schools," or more popularly known as the "Act of 1834." It was the foundation of the present free school system of Pennsylvania.

The adoption of the act of 1834 did not, however, end agitation on the subject, for the measure encountered much opposition, and the question became, for

a time an important one in Pennsylvania politics. The whole State was aroused as never before. The act was so new it could not be generally understood. The chief opposition of the act of 1834 was because it provided for taxation to support the schools; some opposed it because they objected to the poor being educated at the expense of others; the religious sects which already supported schools, the Friends, Mennonites, Reformed, Lutherans, and the Catholics opposed it because of their fear that it would work against their schools, and also that it would add an additional tax burden which they did not wish to bear; and then there were many others who opposed it through their own ignorance. Schools or no schools was the issue, and a majority of the General Assembly was chosen against the measure.

Efforts to repeal the law of 1834 failed, even though the results of the election for acceptance or rejection of the act were by no means decisive. The Senate voted to repeal, but Governor Wolf remained firm, and sent a strong message urging the retention of such a system, when the eloquent and powerful support of Thaddeus Stevens, with eloquence and flashes of sarcasm roused the enthusiasm of the supporters of the school system and discouraged its opponents. Stevens had been an Anti-Mason, a political enemy of Governor Wolf, nevertheless, he said in his speech: "If the opponent of education were my most intimate personal and political friend and the free-school candidate my most obnoxious enemy, I should deem it my duty as a patriot to place myself unhesitatingly and cordially in the ranks of him whose banner streams in light." Wickersham, in his "History of Education in Pennsylvania," says of the speech of Stevens against the repeal of the act of



Early School

1834: "Competent judges of all parties who witnessed the fight agree that had he not stood like a rock furnishing shelter and imparting strength to the free school combatants, and bidding defiance to the fiercest of those who would have struck them down, the law of 1834 would have been swept from the statute book or been saved only by a veto from the Governor, and the day of universal education in Pennsylvania might have been indefinitely postponed." The act of 1834 was saved. Governor Wolf was defeated for reelection, but his successor, Joseph Ritner, proved to be as ardent a champion of education.

By the act of June 13, 1836, a few of the defects of the act of 1834 were removed, some of its good points strengthened by the friends of education then serving in the General Assembly. Thomas H. Burrowes became the Secretary of the Commonwealth and Superintendent of the Common Schools under Governor Ritner. His hand fashioned much of the school legislation between 1836 and the end of his second term as Superintendent of Common Schools, in 1863. Thus this man, who confessed in 1836 that he "knew no more about the details of schools than about the local geography of the moon," became a pillar in the structure of public education in Pennsylvania. He did much to develop the training of teachers by means of normal schools and teachers' organizations.

The first public high school in the United States was established in Philadelphia in 1836, the school being opened with sixty-three pupils, October 26, 1838.

William Holmes McGuffey, author of the most famous "McGuffey Readers," was native of West Findley Township, Washington County.

Governors Porter, Shunk, and Johnston each accepted the public schools system as organized and each in turn made suggestions for its improvement. Beginning with 1852 there were settled the most vital questions in the educational history of Pennsylvania, the all important training of teachers and of higher education. This began under Governor Bigler, in 1854, when greater power to collect the school tax was given; geography and grammar, together with other higher branches, were to be taught in the schools, which were to be graded; normal school law was passed; and county superintendents were to be elected. The cause of public education was advanced in the election of Governor Pollock, who appointed Andrew G. Curtin as Secretary of the Commonwealth and Superintendent of Common Schools and Henry C. Hickok as Deputy Superintendent. A separate department of education was established by the act of April 18, 1857, and Henry C. Hickok was made the first head of the new department.

The Constitution of 1873 gave three sections exclusively to education. They provided for the education of all the children, shut the door to further appropriations for sectarian institutions, and made women eligible to any office of control or management under the school law.

Child welfare legislation has been enacted and the compulsory attendance law was signed by Governor Hastings, May 16, 1895. The teachers' minimum salary act was signed by Governor Pennypacker April 9, 1903. The State Educational Commission was authorized in 1907, and organized with the following members: Nathan C. Schaeffer, of Lancaster, Superintendent of Public Instruction; Martin G. Brumbaugh, Superintendent of Schools of Philadelphia; William Lauder, Riddlesburg; John S. Rilling, Erie; David B. Oliver, Allegheny; James M. Coughlin, Wilkes-Barre, and George M. Phillips, West Chester. The first work of great importance was the preparation of a comprehensive bill in 1909, embodying all school legislation of the Commonwealth, which was finally passed as the code of 1911. This served as the law until the Edmunds act of 1921.

Training of Teachers—The University of Pennsylvania, begun as an academy in 1749, was designed partially as a school for teachers. Dr. Benjamin Franklin, the chief among its founders, in addressing the Common Council of Philadelphia for aid in its behalf, states that “as the country is suffering greatly for want of competent schoolmasters, the proposed Academy will be able to furnish a supply of such as are of good morals and known character, and can teach children reading, writing, arithmetic and the grammar of their mother-tongue.”

The preparation of teachers was made the object at the Westtown Boarding School, established by the Society of Friends, in 1799. The Moravians, with characteristic foresight as educational pioneers, established, in 1807, at Nazareth Hall, a special department for the preparation of teachers.

There never was a time when the friends of the public school system of Pennsylvania did not contemplate some plan for preparing teachers essential to its success, yet it was not until May 20, 1857, that Governor James Pollock was able to sign a bill, entitled “an Act to provide for the due training of teachers for the common schools of the State.” This bill was drawn by Thomas H. Burrowes.

At an early day it was thought by many that teachers could be properly trained in colleges and academies, and, with this end in view, liberal appropriations were made to these classes of institutions by the State. Some of the State Superintendents, from the first, recommended the establishment of teacher’s seminaries or normal schools, and appeals to the General Assembly became more frequent and more urgent.

In 1830 Washington College created new professorship of English Literature with the special view of qualifying young men for the teaching of common schools. The Legislature, in 1831, appropriated \$500 a year to this college for the teaching of twenty students gratis. In 1832 Jefferson College received an appropriation of \$5,000 a year for five years for keeping in training twenty-four students as teachers. The first school in Pennsylvania, and, it is believed, in the United States, established specially for the education of teachers, was the Model School, connected with Lafayette College, in 1838.

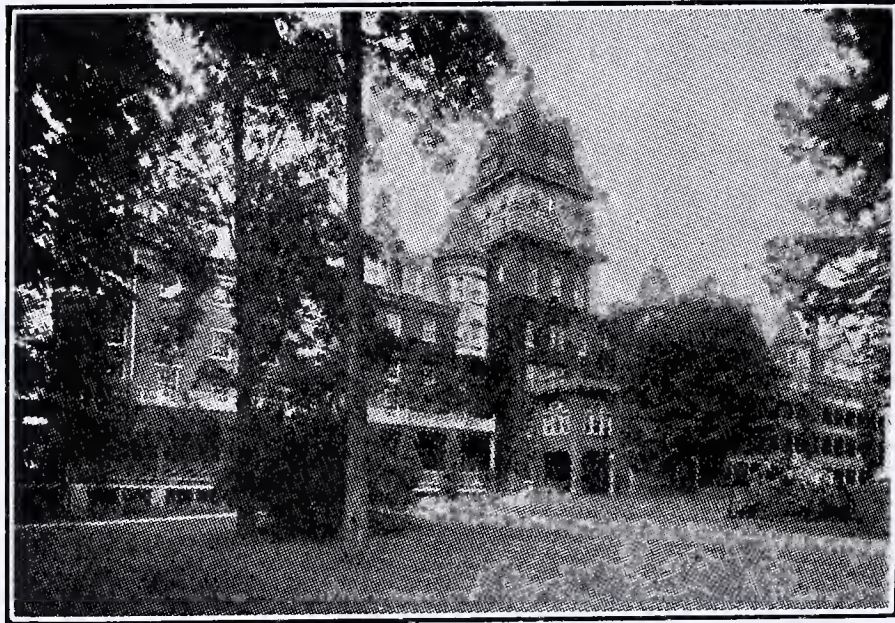
The coming of the normal schools might have been much longer delayed, had their necessity not been made more apparent by the working of the county superintendency. Indeed, the normal school law of 1857 may fairly be considered the fruit of that agency.

The county superintendents who had been foremost in refusing to certificate the old, incompetent teachers, were forced to exert themselves to provide new and better qualified teachers. Hence, temporary teachers’ schools, normal institutes, as they were called, were established in a number of counties.

The largest of these normal institutes and the one that attracted most public attention was located in the little town of Millersville, Lancaster County. This institution had no small influence in shaping the normal school policy of the State,

and eventually became the first of our State normal schools, and the mother of them all.

Soon after the signing of the act of May 20, 1857, the Millersville school shaped itself into conformity with the act, and was officially recognized as the first of our State normal schools during the administration of State Superintendent Henry C. Hickok, December 2, 1859. Those at Edinboro and Mansfield followed the example and became State normal schools, under the law, in 1861 and 1862, respectively.



Millersville State Teachers' College

The first Millersville report states that the cost of grounds, buildings and equipment of the school was \$60,000 and the number of students in attendance four hundred. The first State appropriations to the normal schools were made in 1861. By 1865, each of the three schools then in operation had received \$15,000.

The most notable educational event to occur during this period was the legislative visit to the

Millersville Normal School in 1862. This visit was made by the members in a body and was an innovation for the General Assembly of Pennsylvania. A day was spent by the members inspecting the buildings, witnessing the recitations, watching the public teaching in the model class, eating dinner and making speeches. They were delighted with the institution and the school was cheered and strengthened by the visit.

There are fourteen State normal schools or teachers' colleges in Pennsylvania, in order of their establishment, as follows: Millersville, 1859; Edinboro, 1861; Mansfield, 1862; Kutztown, 1866; Bloomsburg, 1869; West Chester, 1871; Shippensburg, 1873; California, 1874; Indiana, 1875; Lock Haven, 1877; Clarion, 1886; Slippery Rock, 1889; East Stroudsburg, 1893; and the Cheyney Training School for Negro Students Teachers, founded in 1837, in Philadelphia, but which became a State-owned teacher-training institution in 1921. There are two city normal schools, one in Philadelphia and the Training School for Teachers in Pittsburgh.

Manual Labor Schools—The importance of technical and vocational education has been understood from the earliest time. William Penn's Frame of Government prescribed that all children should "be taught some useful trade or skill." The early Quakers advocated and supported industrial education, and the same is quite as true of the German sects. The Ephrata community had its cloister schools, where many kinds of useful arts and trades were taught.

The manual labor school movement attracted much attention in democratic

America about 1825 and many schools were founded on this plan or adopted the idea in part.

An interesting story of the first successful school of this type in Pennsylvania is that of Reverend George Junkin. While serving as pastor of Associate Reformed



State Teachers' College, Kutztown

Church in Milton, he was taken ill during the time he was having a barn built on his small farm. This was in February, 1822.

He had employed William Thomas, who attended his church, to build his barn. Mr. Junkin requested that Mr. Thomas should lead the family devotion in the apartment at the foot of the stairs so that he might hear and enjoy the service.

One morning Thomas asked his apprentice, Matthew Laird, to conduct the service. At its conclusion Doctor Junkin remarked to his wife: "That young man's prayer went to my heart, it was fervent and tender, and if God spares my life, that young man shall enter the ministry."

The vow was fulfilled. That prayer of Matthew Laird's was, in a certain sense, the incident which brought into existence the first manual training school; the first link in the chain that led to the organization of Lafayette College; and it caused to be prepared for the African mission field one of its most successful missionaries.

The boy wanted an education but had to work. That gave the far-seeing Junkin an idea, and when he recovered from his illness, he took Matthew Laird and David Gaston under his care to study for the ministry. He changed the original plans of his barn so as to include an apartment which might serve as a carpenter shop, where the young men could work at their trade, and by exercise keep up the tone of their system by healthy labor, and provide part of the expenses of their education.

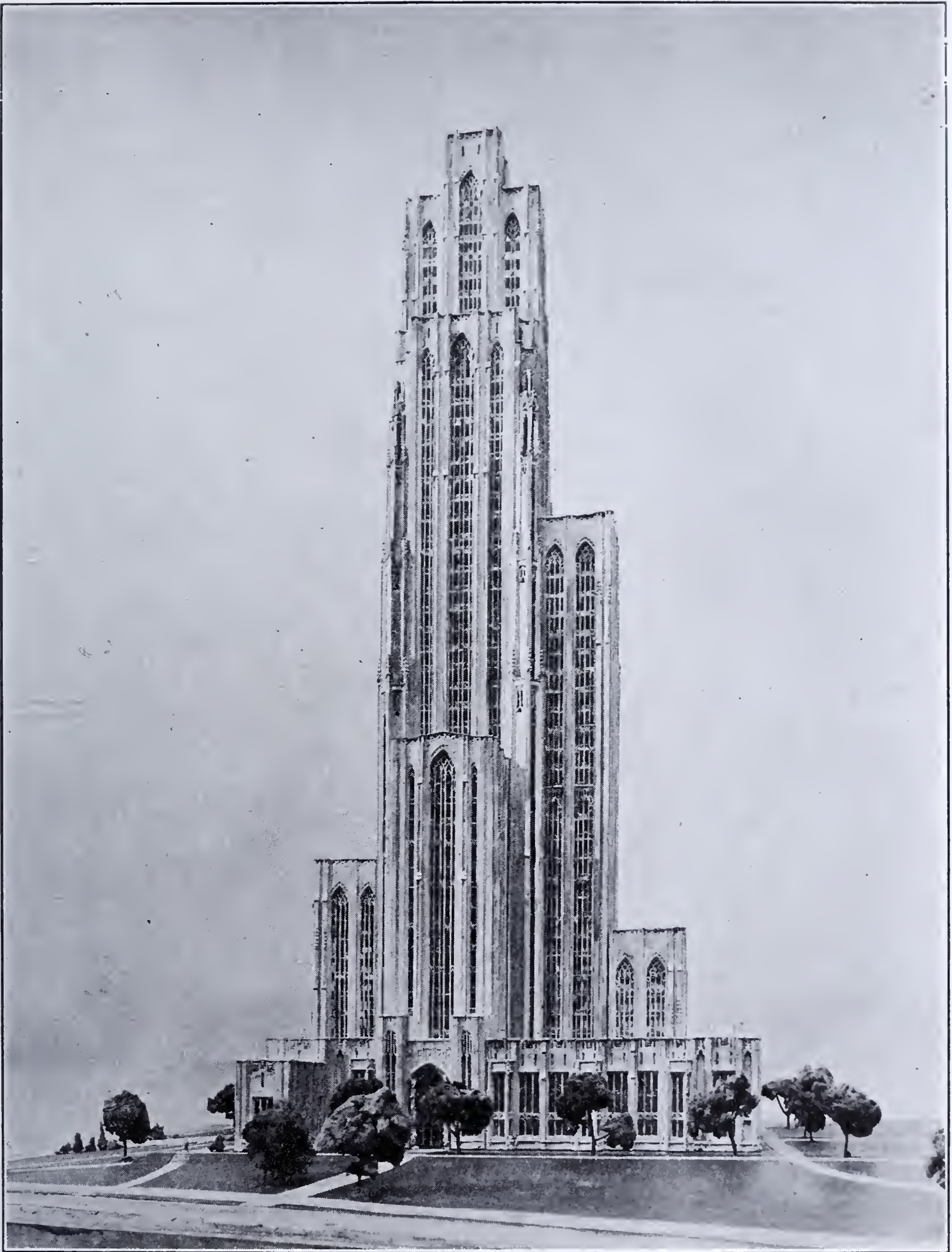
The success of this enterprise led Dr. Junkin to take an active interest in establishing the Milton Academy, and following up this idea of study with work, his mind was attracted to the Manual Labor Academy of Pennsylvania, which had been recently organized in Germantown in 1821, and in 1830 he became its president, "convinced," he says himself, "that I might be useful in bringing into the ministry men of the right stamp, and thus do more than I could in my pastoral position." This manual training school was not intended primarily to make only artisans, mechanics, or artists of any sort, but had been inaugurated by philanthropic gentlemen of the Presbyterian Church, in and around Philadelphia, with a view to facilitate the education of young men for the Christian ministry.

On February 6, 1832, Dr. Junkin was elected the first president of Lafayette College at Easton. The idea of combining with study the health-preserving labor of the hands, influenced him to take along with him a number of the young students of the Manual Labor Academy, who fitted up the premises, and the college was opened May 9, 1832, upon the principle of manual labor, and so conducted until 1839.

Daniel Gaston, one of the original students in manual training, was a member of President Junkin's original faculty of Lafayette College, and was the business agent. He later entered the ministry of the Presbyterian Church, and enjoyed a remarkably successful pastorate. He died in Philadelphia, in 1865.

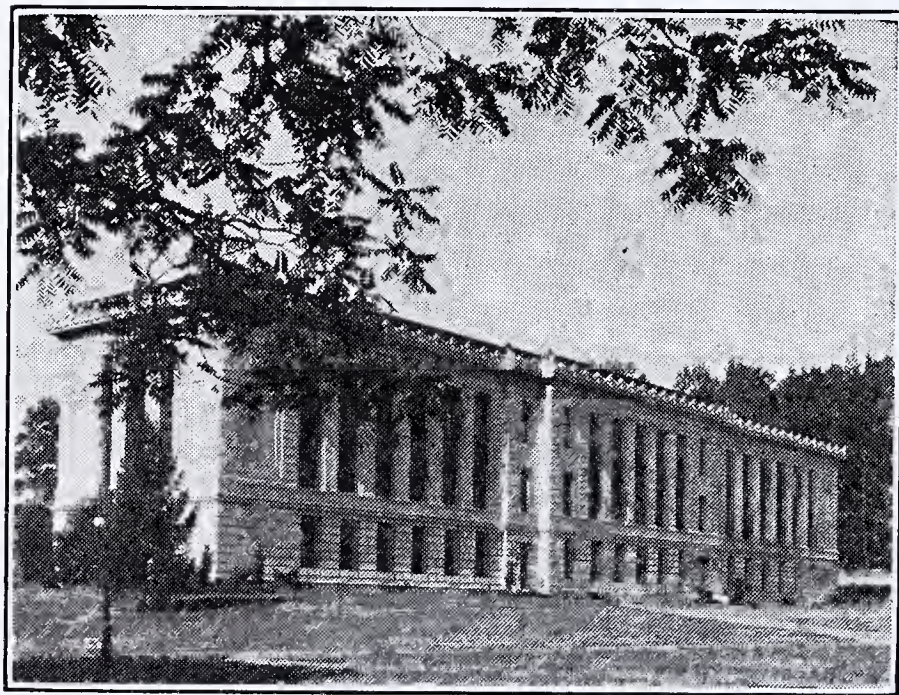
Matthew Laird's father came from Ireland and served as a wagoner with General Braddock's army; he settled in what is now Union County in 1788. His fifth son was Matthew. After being ordained in the Presbyterian ministry, Matthew and his wife sailed for Africa, where they served as missionaries until his death there, May 4, 1834.

The act of 1834 provided for the establishment of manual labor departments in the common schools, but the provision was never utilized. Dr. Junkin suggested that a manual labor academy be established at Harrisburg and be under the direction of the State government. There are several State-owned schools where the principle of manual training is carried out; the Pennsylvania Soldiers' Orphan Industrial School was established at Scotland, Franklin County, in 1893, now known as The Soldiers' and Sailors' Orphan School; the Thaddeus Stevens Industrial School, at Lancaster; and the Pennsylvania State Oral School for the Deaf, at Scranton. Among the State-aided schools which teach manual education are Downingtown Industrial and Agricultural School; National Farm School; Pennsylvania Institution for the Deaf; Pennsylvania State Nautical School; Philadelphia School of Design for Women; Pennsylvania Institution for the Instruction of the Blind; Pennsylvania Museum and School of Industrial Art; Pennsylvania Commercial Museum; Western Pennsylvania School for the Blind; and Western Pennsylvania School for the Deaf. Several of the correctional institutions as well as many privately organized schools train the youth in habits of morality, economy and industry, as well as provide an elementary education and teach them mechanical trades.



Cathedral of Learning, University of Pittsburgh

Colleges and Universities—There are fifty-four colleges and universities in Pennsylvania which are accredited by the State Council of Education, as follows: For men, Franklin and Marshall, at Lancaster; Haverford, at Haverford; Lafayette, at Easton; LaSalle, at Philadelphia; Lehigh University, at Bethlehem; Lincoln University, at Lincoln; Moravian College and Theological Seminary, at Bethlehem; Pennsylvania Military College, at Chester; St. Francis College, at Loretto; St. Joseph College, at Philadelphia; St. Thomas College, at Scranton; St. Vincent College, at Latrobe; and Washington and Jefferson, at Washington. For women, Beaver College, at Jenkintown; Bryn Mawr, at Bryn Mawr; Cedar Crest, at Allentown; College Misericordia, at Dallas; Immaculata, at Immaculata; Marywood, at Scranton; Mercyhurst, at Erie; Moravian College for Women, at Bethlehem; Mt. St. Joseph, at Philadelphia; Pennsylvania College for Women, at Pittsburgh; Rosemont, at Rosemont; Seton Hall, at Greensburg; Villa Maria, at Erie; and Wilson, at Chambersburg. Co-educational are Albright, at Reading; Allegheny, at Meadville; Bucknell, at Lewisburg; Carnegie Institute, at Pittsburgh; Dickinson, at Carlisle; Drexel Institute, at Philadelphia; Dropsie, at Philadelphia; Duquesne, at Pittsburgh; Elizabethtown, at Elizabethtown; Geneva, at Beaver Falls; Gettysburg, at Gettysburg; Grove City, at Grove City; Juniata, at Huntingdon; Lebanon Valley, at Annville; Muhlenberg, at Allentown; Pennsylvania State, at State College; Philadelphia College of Pharmacy and Science, at Philadelphia; Susquehanna University, Selinsgrove; Swarthmore, at Swarthmore; Temple University, at Philadelphia; Thiel, at Greenville; University of Pennsylvania, at Philadelphia; University of Pittsburgh, at Pittsburgh; Ursinus, at Collegeville; Villanova, at Villanova; Waynesburg, at Waynesburg; and Westminster, at New Wilmington.



Pennsylvania State College

Pennsylvania State College—The Pennsylvania State College is the Keystone link in the chain of land grant colleges and Universities that was created, one or more in each State, when President Lincoln signed the Morrill Land Grant College Act of Congress on July 2, 1862.

The college receives the bulk of its support from the State and Federal governments, and, there-

fore, bears a peculiar relation to education in Pennsylvania.

The Pennsylvania Agricultural Society, in 1853, recommended the establishment of a school for farmers. The charter was granted to the "Farmer's High School" in 1855. The purposes of the school, as expressed in the charter, were "the

education of youth in the various branches of science, learning, and practical agriculture, as they are connected with each other." The school was opened in February, 1861, with six students. The first class, of eleven members, was graduated in December, 1861.

The Legislature, in 1863, accepted the provisions of the Morrill Act, and the Farmer's High School was chosen as the nucleus of the new institution, which was called the "Agricultural College of Pennsylvania," and in 1874 the name was again changed to Pennsylvania State College.

The development of the new school was slow, but in recent years the college has grown rapidly and stands in the forefront of similar American colleges. From a purely agricultural school it has developed into a college where thirty undergraduate curriculae are offered by the schools of Agriculture, Chemistry, Physics, Education, Engineering, Liberal Arts, Mines and Metallurgy, and a Graduate School. In addition there are departments of Military Science and Tactics, Physical Education, and Athletics.

There are eighteen theological seminaries, as follows: Academy of the New Church (Swedenborgian), Bryn Athyn; Crosier Theological Seminary (Baptist), Upland; Divinity School of Protestant Episcopal Church, Philadelphia; Eastern Baptist Theological School, Easton; Luthern Theological Seminary, Gettysburg; Lutheran Theological Seminary, Mt. Airy; Moravian College and Theological Seminary, Bethlehem; Philadelphia School for Christian Workers, Philadelphia; Philadelphia Theological Seminary of St. Charles Borromeo (Roman Catholic), Overbrook; Pittsburgh-Xenia Theological Seminary (United Presbyterian), Pittsburgh; Reformed Presbyterian Theological Seminary, Pittsburgh; St. Vincent Theological Seminary (Catholic), Beatty; Theological Seminary, Lincoln University (Presbyterian), Lincoln University; Theological Seminary of the Reformed Episcopal Church, Philadelphia; Theological Seminary of the Reformed Presbyterian Church in North America, Philadelphia; Theological Seminary of the Reformed Church in the United States, Lancaster; Theological Seminary, Susquehanna University (Lutheran), Selinsgrove; The Western Theological Seminary (Presbyterian), Pittsburgh.

The five law schools of Pennsylvania are: Law School, Dickinson College, Carlisle; School of Law, Duquesne University, Pittsburgh; Law School, Temple University, Philadelphia; Law School, University of Pennsylvania, Philadelphia; School of Law, University of Pittsburgh, Pittsburgh.

The seven medical colleges are the following: Hahnemann Medical College, Philadelphia; Jefferson Medical College, Philadelphia; School of Medicine, Temple University, Philadelphia; School of Medicine, University of Pennsylvania, Philadelphia; School of Medicine, University of Pittsburgh, Pittsburgh; Women's Medical College of Pennsylvania, Philadelphia; and the Philadelphia College of Osteopathy, Philadelphia.

The School of Veterinary Medicine is a part of the University of Pennsylvania.

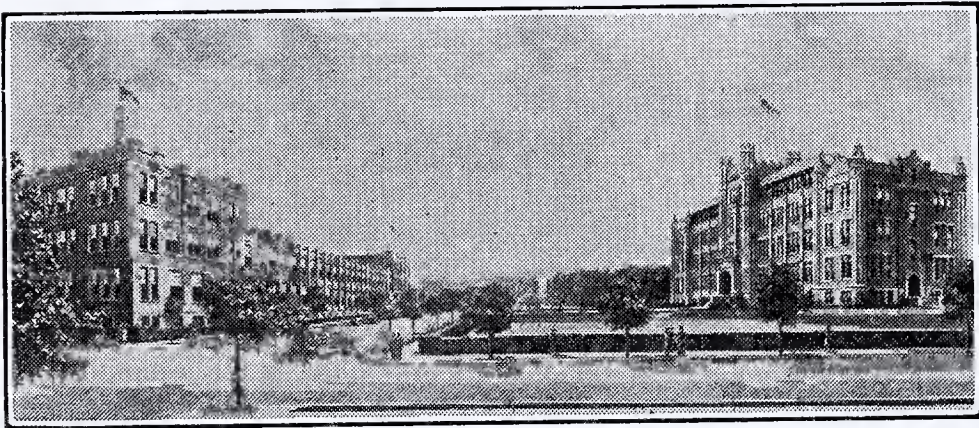
There are three dental colleges, those in Philadelphia are connected with the University of Pennsylvania and Temple University, and the other is a part of the University of Pittsburgh.

The four colleges of pharmacy are also located in Philadelphia and Pittsburgh, the former are Philadelphia College of Pharmacy and Science and School of Pharmacy in Temple University; those in Pittsburgh are College of Pharmacy, in Duquesne University, and School of Pharmacy in University of Pittsburgh.

The Philadelphia State College of Optometry and the Philadelphia College of Osteopathy are in Philadelphia.

State-owned Schools—Home for the Training in Speech of Deaf Children, Philadelphia; Pennsylvania Soldiers' Orphan School, Scotland; Pennsylvania State Oral School for the Deaf, Scranton; Thaddeus Stevens Industrial School of Pennsylvania, Lancaster.

State-aided Schools—Downingtown Industrial and Agricultural School, Downingtown; National Farm School, Farm School; Pennsylvania Institution for the Deaf, Mt. Airy, Philadelphia; Pennsylvania State Nautical School, Philadelphia.



International Correspondence School, Scranton

The International Correspondence School, of Scranton, is the largest institution of its kind in the world.

Dr. James N. Rule, of Harrisburg, is Superintendent of Public Instruction; W. M. Denison and Dorr E. Crosley, Deputy Superintendents. The State Council of Education is

composed of the president and chief executive officer, James N. Rule and Mrs. Edward W. Biddle, of Carlisle; Francis R. Cope, Jr., Dimock; Charles E. Dickey, Pittsburgh; Samuel S. Fleisher, Philadelphia; Weir C. Ketler, Grove City; Mrs. Alice F. Kierman, Overbrook; LeRoy A. King, Narbeth; F. A. Loveland, Carry; William R. Straughn, Mansfield; and D. E. Crosley, secretary.

College Presidents—John Aberly, born in Albrightsville, Lutheran Theological Seminary, Gettysburg, since 1926; Joseph Henry Apple, born in Reimersburg, Hood College, Frederick, Maryland, since 1893; Bowman Foster Ashe, born in Scottdale, University of Miami, Coral Gables, Florida, since 1926; Edward Fry Bartholomew, born in Sunbury, Carthage College and Theological Seminary, 1911-19; Katharine Blunt, born in Philadelphia, Connecticut College, New Haven, Connecticut, since September, 1929; William Judson Boone, born in Canonsburg, College of Idaho, Caldwell, Idaho, since 1891; Clellan Asbury Bowman, born in Dauphin County, Albright College, 1902, until merged with Schuylkill College; William Waddell Boyd, born in Allegheny, Western College for Women, Oxford, Ohio, since 1914; Edgar Ewing Brandon, born in York Springs, Miami Univer-

sity, acting; Charles Henry Breed, born in Pittsburgh, head master, Blair Academy, since 1927; Orvon Graff Brown, born in Greensburg, Twin Valley College, since 1917; Abram Roger Brubacher, born in Lebanon, New York State College, since 1914; John Calvin Bucher, born in Dillsburg, principal Peekskill Military Academy, New York; Charles Ernest Bunnell, born in Dimock, Alaska College & School of Mines, since 1922; Walter Gillan Clippinger, born in Franklin County, Otterbein College, Ohio, since 1909; Ruth Cort, born in Philadelphia, headmistress, St. Mary's Hall, San Antonio, Texas, since 1924; Melville Fuller Coolbaugh, born in Monroe County, Colorado School of Mines, since 1925; Richard Garfield Cox, born in Ebensburg, Gulf Park College, Mississippi, since 1919; John Martin George Darms, born in Philadelphia, Mission House College & Seminary, Wisconsin, since 1923; George West Diehl, born in Northumberland County, Morris Harvey College, West Virginia, since 1929; Jacob Diehl, born in Greencastle, Carthage College, Illinois, since 1929; Silas Evans, born in Scranton, Ripon College, Wisconsin, since 1921; Lynn Harold Harris, born in Milton, Howard Seminary, West Bridgewater, Massachusetts, since 1927; William Mestrezat Hudson, born in Greene County, Blackburn University, Illinois, since 1912; Lincoln Hulley, formerly of Bucknell University, Lewisburg, John B. Stetson University, Florida, since 1904; Herman Gerlach James, born in Philadelphia, University South Dakota, since 1929; Wilbert R. McChesney, born in Wampum, Reformed Theological Seminary, Cedarville, Ohio, since 1915; James M. McConnell, born in Armstrong County, Commissioner of Education, Minnesota, since 1919; George Shannon McCune, born in Pittsburgh, Union Christian College, Korea; Hervin Ulysses Roop, born in Highspire, Lincoln Memorial University, Tennessee, since 1928; Charles E. Beury, born in Shamokin, Temple University, Philadelphia, since January, 1926; John A. W. Haas, born in Philadelphia, Muhlenberg College, Allentown, since 1904; William Charles Wallace, born in Jamestown, Westminster College, New Wilmington, since 1916; Paul Rich Stewart, born in Spraggs, Waynesburg College, Waynesburg, since 1921; Warren Floyd Teel, born in Martins Creek, Albright College (formerly Schuylkill College), since 1901; Edwin Mitman Hartman, born in Applebachville, principal Franklin & Marshall Academy, Lancaster, since 1897; Alvan Ruckman Grier, born in Birmingham, Birmingham School, since 1907; Milton G. Evans, born in Ebensburg, Crozier Theological Seminary, Chester; Ross V. Patterson, born in Philadelphia, dean Jefferson Medical College, Philadelphia; Lester Kelly Ade, born in Trout Run, principal State Normal School, New Haven, Connecticut, since 1928; Cyrus Adler, born in Philadelphia, Dropsie College, since 1908; Henry Harbaugh Apple, born in Mercersburg, Franklin & Marshall College, Lancaster, since 1909; Dallas Warren Armstrong, born in Mercer County, Central State Teachers' College, Lock Haven, since 1925; Simon Strouse Baker, born in Washington County, Washington & Jefferson, 1922-31; Katharine Fleming Branson, born in Coatesville, headmistress Katharine Branson School, Ross, California, since 1920; Harvey A. Bordner, born in Mt. Aetna, superintendent Philippine Island School System, since 1902; William

Wistar Comfort, born in Germantown, Haverford College, since 1917; Katharine Mary Dentworth, born in Williamsport, Bradford Academy and Junior College (Massachusetts), since 1927; George Daniel Gossard, born in Greencastle, Lebanon Valley College, Annville, since 1912; Francis Buchman Haas, born in Philadelphia, State Teachers' College, Bloomsburg, since 1927, and was Superintendent State Department Public Instruction, 1925-27; Daniel L. Marsh, born in West Newton, Boston University, since 1926; Charles Adolphus Mock, born in Bedford County, Western Union College, Le Mars, Iowa, since 1911; McLeod Milligan Pearce, born in Bellevue, Geneva College, Beaver Falls, since 1923; Amos Cornelius Rothermel, born in Moselem, principal State Teachers' College, Kutztown, since 1899; Morris Purdy Shawkey, born in Sigel, Marshall College, Huntingdon, West Virginia, since, 1921; Parley Paul Womer, born in Osceola, Washburn College, Topeka, Kansas, since 1915.

Charities and Correctional Institutions—Provision is made for the care of criminal, indigent, insane, and other defective and dependent persons in numerous State institutions under the general supervision of the Department of Welfare. The correctional institutions, aside from the county jails, are the Eastern and Western Penitentiaries, the former at Philadelphia, opened October 25, 1829, and the latter at Pittsburgh, opened in 1826. In Centre County is the department of the Western Penitentiary, known as Rockview. All persons convicted of murder of the first degree are sentenced to suffer death by electrocution, at Rockview. The first execution took place February 8, 1915.

In the middle district, instead of a third penitentiary, the Industrial Reformatory at Huntingdon was established February 15, 1889. Pennsylvania Training School, at Morganza, opened December 13, 1854, is for juvenile delinquents from the western counties; the Glen Mills Schools, in Delaware County, a semi-State institution for the juvenile delinquents from the eastern counties. The State Industrial Home for Women, at Muncy, was established by act of July 25, 1913. The home has a farm of 500 acres. Here women, convicted of misdemeanor or criminal offenses, are taught to become useful citizens:

The hospitals for the insane are located at Harrisburg, opened October 6, 1851; Danville, opened November 6, 1872; Norristown, opened July 12, 1880; Warren, opened in 1873; and Torrance, opened in 1919. The Wernersville State Hospital, South Mountain, opened November 25, 1919, is an asylum for the chronic able-bodied insane. The Farview State Hospital, at Farview, opened December 17, 1912, is for the criminal insane.

The Commonwealth maintains hospitals for injured miners at Ashland, Blossburg, Coaldale, Connellsville, Hazleton, Nanticoke, Philipsburg, Scranton, Shamokin, and Shenandoah.

The Laurelton State Village, Laurelton, established in 1913, is for the care of feeble-minded women of childbearing age; Pennhurst State School, near Spring

City, established in 1903, is for epileptic and feeble-minded persons; Polk State School, at Polk, opened April 21, 1897, is for feeble-minded children; Cumberland Valley State Institution for Mental Defectives, authorized by act of July 25, 1913, will develop a new institution for the detention, care, and treatment of inebriates; and the Selinsgrove State Colony for Epileptics, opened in 1929, is for the special care of epileptics. The Soldiers' and Sailors' Home, at Erie, established under act of June 3, 1885, completes the list of Pennsylvania charitable institutions.

Pennsylvania Day—For a number of years forward-looking educators in Pennsylvania and leaders in ancestral and other patriotic bodies have felt the need of a day especially set aside in the schools of the Commonwealth to be known as Pennsylvania Day.

The consensus of opinion was that some date should be selected that would commemorate the achievements of the Founder of the Province. For a time it was thought that the date of Penn's Landing should be selected, but it was finally agreed that the most appropriate time would be March 4, since that is the date of the granting of the charter of Charles II, of England, to William Penn.

Act Creating Pennsylvania Day—In furtherance of this purpose, at the request of the Phœbe Baird Chapter, Daughters of the American Revolution, a bill was introduced into the General Assembly, which was as follows:

SECTION 1. Be it enacted, etc., That the Governor shall annually issue his proclamation designating Pennsylvania Day and calling upon the public schools and the citizens of Pennsylvania to observe said day as a patriotic day. Said Pennsylvania Day shall be on the fourth day of March each year, unless such day falls on Saturday or Sunday, in which event the Governor may declare the preceding Friday or the following Monday as Pennsylvania Day. In pursuance to said proclamation of the Governor suitable exercises having reference to the historic event of the granting of the Charter of Pennsylvania by Charles II of England to William Penn, and the life and principles advocated by William Penn in founding Pennsylvania, shall be held in the public schools of the Commonwealth.

The bill was passed and was approved by Governor Fisher March 9, 1927.

CHAPTER IX.

LOTTERIES.

The Quakers, who dominated the Province for more than a half century after its founding, were consistently opposed to all games of chance. At the very first meeting of the Assembly, at Chester, in 1682, an act was passed against cards, dice, lotteries, etc. This and similar acts were annulled by the English Government.

Although lotteries were not legally prohibited, only one lottery appears to have been drawn during the next several decades. In 1720 a Mr. Reed by means of a lottery of 350 tickets, which were sold for twenty shillings each, disposed of a new brick house and several lots in Philadelphia. In 1730 lotteries were prohibited under a penalty of £100, half of which was to go to the Governor, and half to the party bringing suit.

It was possible for the Provincial Assembly to authorize lotteries by special legislation, for it is known that at least two lotteries had the official sanction of the Philadelphia Council: one in 1747 for the fortification of the city, the other a year later for street paving. From this time until the passage of the anti-lottery act of 1762, lotteries increased in number. From 1747 to 1833 there were 176 separate lotteries. One single lottery, Union Canal Lottery, awarded in prizes more than \$33,000,000 between 1811 and December 31, 1833.

The lottery of 1782 for the improvement of roads west of Philadelphia was managed as a State lottery; others were county, city, borough and township schemes. Some were for the erection of bridges, ferries, and even improving creeks. One was for a garden and public bath in Philadelphia, one for the pay of soldiers in the French and Indian War, hospitals were also included, as were schools. Many churches were built by means of these lotteries, and the newspapers of that period carried many advertisements, both for those authorized by the Pennsylvania General Assembly and those of other States. It is estimated that at least fifty lotteries chartered by other States had agencies in Pennsylvania.

With the establishment of the Federal Government the financial condition of the country rapidly improved. The gradual growth of population, and rapid develop-

Look Here!

\$1500,

1000 Dollars,

800 Dollars,

500 Dollars,

Capital, with a large number of handsome prizes, will be distributed to some fortunate adventurers in the

LOTTERY

For the Benefit of

Harmony Church,

IN MILTON,

(Which will positively commence drawing on Monday the 10th of June)

Prizes and blanks all to be drawn in twelve days drawing.

Agents having tickets, and who have not yet made return to the managers, are required to do it immediately as no Tickets will be entitled to a prize of which no return has been made previous to the drawing.

All prizes will be paid within 60 days after the completion of the drawing if called for and if not called for within 6 months, will be considered as relinquished for the benefit of the institution.

Present price of Tickets, THREE dollars, but will advance to FOUR immediately on the commencement of the drawing.

* * Tickets to be had of either of the managers in Milton, where all orders enclosing the cash will be thankfully received and promptly attended to

Joseph D. Biles,

Adam Follmer,

MANAGERS,

Milton, May 9, 1822—N.

ment of business, caused increased demands for new churches, schools, public buildings and improved transportation. To meet these public needs the regular revenue was insufficient, and to avoid an abnormal increase in taxation, petitions were presented to the General Assembly for the privilege of establishing public or semi-public lotteries. The General Assembly rejected all requests for lotteries, except when some important purpose was to be served. The only lottery authorized in 1790 was for the erection of a Jewish synagogue; none others then until 1795, when one was granted the Aaronsburg Town Lottery, in now Centre County, and one other to aid in opening the canal navigation between the Schuylkill and Susquehanna rivers.

During this period lotteries were drawn for the College, Academy and Charitable School of Philadelphia, to complete the Episcopal Church, and other religious and educational institutions. The act of 1762 proved to be effective in limiting the number and purposes for which lotteries might be established. Between 1762 and 1795 there were only twenty-three lotteries in Pennsylvania, six of which were private, eight were for public use, and nine for the erection of church buildings, in which twenty-one churches were concerned. From 1795 to 1808, inclusive, seventy-eight different lotteries were authorized.

By the act of April 17, 1795, the president and managers of the Schuylkill and Susquehanna Navigation, and the president and managers of the Delaware and Schuylkill Canal Navigation, were authorized to raise by means of a lottery, a sum of \$400,000 for the purpose of completing the works in their acts of incorporation, under a prohibition that neither of them should form the same into capital stock upon which to declare a dividend of profits. An act passed March 4, 1807, authorized the said companies to raise their respective sums separately, subject to the prohibition as to dividends. The two companies were consolidated by act of April 2, 1811, into a corporation known as the Union Canal Company of Pennsylvania. The new company was authorized to raise money by loan to complete the canal, to use the proceeds of the lotteries already authorized, and by the twenty-eighth section of the act, authority was given to raise the residue of the original sum equal to \$340,000 by a lottery.

By the act of March 29, 1819, the proceeds of the above lottery were pledged as a fund for the payment of an annual interest of six per cent. upon the stock of the company. By these and subsequent acts, it appears that the lottery grants were given in the first instance to the two companies, and afterwards continued to the Union Canal Company, to aid and encourage the construction and completion of a canal and lock navigation, uniting the waters of the Susquehanna and Schuylkill. In consequence of these lottery grants, individuals were induced to invest their funds in the furtherance of the work, and loans to the amount of \$830,400 were made upon the credit of the capital stock and the profits of the lotteries. The Union Canal Company entered into contracts for the conduct of these lotteries, the last one, October 6, 1824, for five years, which expired December 31, 1829.

There was much sentiment against these schemes, and Pennsylvania became flooded with local and foreign lottery tickets, and many memorials were presented to the General Assembly against all forms of lotteries. As there were laws in force for suppressing and preventing lotteries, there was objection made when the extension of the Union Canal lottery was brought to the General Assembly. The Committee of Ways and Means, February 9, 1828, reported that it was inexpedient to resume the lottery grants to the Union Canal Company at this time and further resolved "that the committee be instructed to bring in a bill to regulate lottery brokers, and to restrain the sale of lottery tickets within this Commonwealth." The lotteries continued to thrive until December 31, 1833, when they were abolished by law in Pennsylvania.

CHAPTER X.

MEDICINE AND THE HEALING ARTS.

With the advent of the aborigine really belongs the history of medicine in America, and it is not derogatory to the science of the healing art to make this acknowledgment in view of the fact that the Indians' discoveries have proved valuable acquisitions to the list of remedies applicable in the treatment of disease. Later, however, came the early settlers, possessing more refined and skilled ideas on the treatment of some of the simpler disorders, gained either from their own experience and observation, or acquired from others.

The genesis of medical science, like that of chemistry, astronomy, or government is necessarily slow and attended with much empiricism. The common people are destitute of scientific methods of investigation. It is not strange, therefore, that mothers and grandmothers of the olden time should insist on applying externally skunk oil or goose fat for the curing of internal derangements. The day of herbs and salves as panaceas was not far removed from the period when cures were sought in miraculous interference in various tricks of sleight of hand performances, and meaningless signs and tokens; when a spider imprisoned in a thimble would cause whooping cough to disappear; when washing the face with water formed from the first snow would remove freckles; washing the hands in stump water would cure warts; or pain would be alleviated by the sorcerer's pow-wow. The transitions from these simple superstitions to the present day patent medicine cure-all remedies was an easy one.

Much as "Grandmothers' Remedies"—nauseous decoctions of herbs that were cultivated in the garden for the purpose, and whose virtues were a traditional heritage from mother to daughter; preparations compounded from the bark and roots of trees, or from drugs that could be obtained at the country store—have been ridiculed, their efficiency on many occasions cannot be questioned.

In colonial times the houses were nearly all built of wood or stone. Most of them were constructed of logs, with rough board partitions, and without plaster. There were no carpets on the floors; the only mode of heating was by wood fire in an open fireplace, near which the family sat in the cold of winter, one side of the body alternately chilled or warmed as it was turned to or from the blazing logs. Clothing was homespun wool or tow; only on ceremonial displays did the well-to-do wear linen or silk shirts or stockings. Underclothing was not worn until the eighteenth century, after cotton cloth had been substituted for woollen stuffs. Overcoats were a rare luxury, only a few of the wealthy men possessed one. "Bangups" they were then called, and were made of good imported cloth, and were expected to last a lifetime, and frequently descended as an heirloom to the son. Rubber shoes and clothing were unknown until the latter half of the nineteenth century.

Diet compared more favorably with that of modern times than did their clothing. Vegetables were plentiful in the summer, but there was no method of preserving the perishable ones through the winter. Bread was made of rye, wheat having come into general use only about the year 1830. The staple meats were salt pork and ham. In the early period game was plentiful and used for food. Mutton was but little eaten by our ancestors. Prior to the Revolution sheep were so valuable that in early wills bequests were made to daughters of a ewe lamb and feather bed in lieu of any real estate. After the embargo laid upon wool it became unpatriotic to eat mutton, which sentiment continued to prohibit its use long after the reason for it had been forgotten. One superlative article of food, which our ancestors possessed in abundance, was milk. It was an unsalable commodity, which made it to be considered as a plebian drink. The dividing line between gentility and the common people was milk.

It is true in all ages, and even today in some parts of Pennsylvania, charlatans, hex doctors, and quacks of various kinds, existed and do still exist. Unfortunately, witchcraft, charms, amulets, astrology, necromancy, alchemy, and magic have been allied with medical practice and medical history, and even yet have devotees, as has recently been brought to public notice in certain counties of our Commonwealth.

No class of pioneer citizens made greater sacrifices for humanity, or deserve stronger marks of recognition, than the genuine medical practitioners of the early days of the Province. The pioneer physician was, perhaps, less highly educated and less polished than his brethren of today, when, with an unselfish, self-sacrificing and fearless devotion to duty, he rode at all hours of the day and night through the sparsely settled districts that marked the advancing wave of civilization. In all times and among all peoples the physician holds a leading place, as the medicine man does in barbaric nations. The modern physician varies only in the volume of knowledge from the pioneer doctor. It is important that the impetus given to the medical art by his labors, and the introduction of rudimentary science into our public schools, and especially the teaching of anatomy, physiology, and hygiene, and the clinics held for the pupils, will finally usher in a period when the people shall better obey the laws of their being, and physicians, instead of being migratory drug stores, shall be as the term "doctor" literally implies, teachers of health principles.

Amid the tremendous progress that has marked the last half century or more, no branch of human knowledge and effort has shown more unequivocal signs of advancement than the science of medicine and the healing arts.

It is not fully known what diseases the early Swedes and Dutch suffered, when they lived along the banks on the Delaware River, nor how they were mitigated by the hands of those skilled in the healing art, and the means of relief. Noah Webster, in his "History of Epidemics and Pestilential Diseases," alludes to the fearful severity of the winter of 1641, and the great sickness that prevailed among the Swedes in the following summer. In 1647 an epidemic prevailed throughout all the colonies, and Webster concludes that there were few, if any, whose skill was suffi-

cient for the exigencies of that visitation. He says: "Such as were bled or used cooling drinks died; such as used cordials or more strengthening things, recovered for the most part." In 1665 another fearful epidemic came on, and in 1668 an excessively hot summer was attended by malignant diseases in America.

One custom prevailed throughout the country at that period and down as late as the advent of Penn—that of being bled. This act of letting a quantity of blood flow from the veins, in the spring or fall of each year, was almost universal. The physicians were not always called in as the professional barber was considered good in such work. It is said that this custom in those early days among barbers led to the red stripes found on the "barber poles," still universally in use. The red stripe indicated that one could, at that shop, be "blooded." The first such barber, or barber-surgeon in Pennsylvania of whom we have certain knowledge was Jan Peterson, who served at ten guilders per month from July 1, 1638. By the time of Penn's arrival there was John Goodson, the chirurgion to the Society of Free Traders, who was probably the very first practicing physician in Pennsylvania.

In those early days the midwife flourished and believed she had as much right to be in the sick room as the trained physician. It seemed to be only in extreme cases that the services of the educated physicians were brought into requisition. Old women also administered simple remedies, learned the qualities of herbs and plants, and were relied upon in cases of illness. On October 28, 1748, John Potts "paid Granny DeHeart, curing Peter Dailey's foot, 10s.," and on the same day David Potts paid her three shillings "for his Negro." Oftentimes it happened that a cure was helped by appealing to superstition. A recipe of 1793 directs the prescription of a plaster for a wound, and that after being used it be "buried under the eaves of the roof at a point where the first sun shines in the morning, in the name of the Father, the Son, and the Holy Ghost."

Doctor Simon Stiddem either accompanied the expedition which brought over Governor Rising, May 21, 1654, or he was in New Sweden ten years before that date. Certain it is that he resided for some time at Upland, for he was the principal witness at the trial of Evert Hendrixson for an outrageous assault on Joran Kyn. He then swore that the Finn, at different times, and without cause, came before his (the doctor's) door, where he made a great noise and trouble with his axe; and on one occasion, when he was going in his canoe to bleed Jacob Swenson, Evert stoned him on leaving Upland Kill so that he was in fear of having his boat sunk or being himself wounded; that he finally got out of the creek, but was drenched by the splashing of the stones in the water, and finally "he was compelled to leave Upland's Kill because of the ruffian."

This absence of further definite information may be regarded as evidence that the earliest colonists, barring accidents from epidemics, were in the main a vigorous and healthy community. Certainly they found such wholesome climatic conditions that they made but few demands upon medical skill, as appears from a letter written in 1685 by Charles Gordon, of New Jersey, to his brother, a physician in England,

in which he says: "If you desire to come hither yourself, you may come as a Planter, or a Merchant, but as a Doctor of Medicine I cannot advise you; for I hear of no diseases here to cure but some Agues, and cutted legs and fingers, and there is no want of empirics for these already; I confess you could do more than any yet in America, being versed both in Chirurgery and Pharmacie, for here are abundance of curious herbs, shrubs, and trees, and no doubt there is little or no employment in this way." Gabriel Thomas, the second historian of Pennsylvania, wrote in 1698, "of lawyers and physicians I shall say nothing, because this country is very peaceable and healthy."

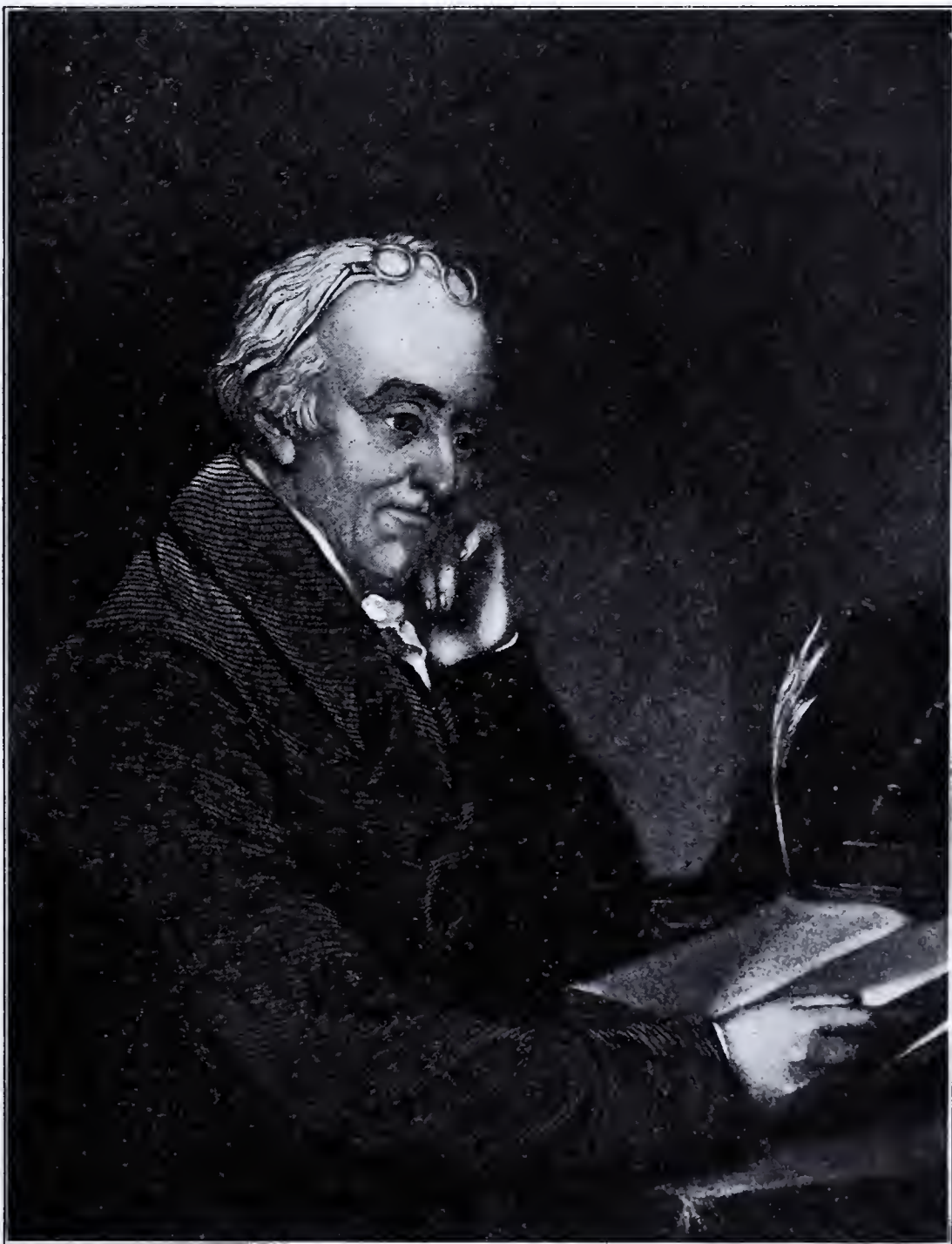
William Penn came to his Province well prepared to aid in its development. He brought along a printer, and representatives of the professions, among the latter being Thomas Lloyd, Thomas Wynne, and Griffith Owen, medical men of standing and character, trained in Europe. The former left a large practice in England, and after settling in Pennsylvania, became in turn Deputy Governor under Penn, President of the Council, and Keeper of the Great Seal of the Province; Owen was a preacher in the Society of Friends as well as a practitioner of medicine, and, like Lloyd, was also a politician, serving in the Assembly, as Deputy Master of Rolls, and Commissioner of Property. Wynne was president of the first Assembly which met in the Province, and was always a most prominent and active citizen. These three, together with Goodson, must be regarded as the pioneers of the medical profession in Pennsylvania. At this period all the physicians, therefore, were Welshmen. Dr. Wynne died in Philadelphia, March 16, 1692, aged sixty-two years. In his recorded will he styles himself "Thomas Wynne, Practitioner of Physick." Thomas Lloyd and Griffith Owen were named by him to administer his estate. John Dickinson was a great-grandson. The practice of Dr. Wynne devolved upon his son-in-law, Dr. Edward Jones. A son of Dr. Owen about this time became of age, and these two young physicians carried on in footsteps of their distinguished preceptors, and were the only physicians until the coming of Dr. John Kearsley, in 1711, and Dr. Thomas Greame, in 1717.

The name of Kearsley was long remembered, and he trained many for great usefulness and who attained distinction; he was a citizen of prominence and of varied interests. Dr. Greame was a naval officer of the port of Philadelphia, justice of the Supreme Court, and established a magnificent estate in present Montgomery County, destined to become long notable under the name of "Greame Park."

Doctors Lloyd Zachary, Thomas and Phineas Bond, and Thomas Cadwalader were the next of great eminence, the latter being the first native of Pennsylvania who began the teaching of medicine, and he was also the author of the first medical publication in America, a small book entitled "An Essay on the West India Dry Gripes," which was printed and sold by Benjamin Franklin, in 1745. In this book Dr. Cadwalader records a post-mortem in 1742, which was one of the first performed in America, probably second only to the autopsy on the body of Governor Sloughter, of New York, who died in 1691, under circumstances that led to the suspicion that he had

been poisoned. Dr. Cadwalader held positions of importance, and was the father of General John Cadwalader, a hero of the Revolution. Dr. Thomas Bond is said by Dr. George Norris, in his "Early History of Medicine in Philadelphia," to have performed the first operation of lithotomy at the Pennsylvania Hospital in 1765, four years before the operation of Dr. Jones, in New York. He also originated and became the first clinical lecturer in America. The Pennsylvania Hospital was established in 1751 largely through the exertions of Dr. Thomas Bond and Dr. Thomas Cadwalader, and with the support of the Quakers.

Dr. John Morgan established the medical school of the college in 1765, being the earliest in the New World. He and Dr. William Shippen were the first pro-



Benjamin Rush

fessors. Dr. Morgan is regarded as the founder of American medicine. During the Revolution he became Director General of Hospitals. His co-worker, Dr. William Shippen, became most distinguished and was one of the founders and trustees

of the College of New Jersey, present Princeton University; he was the first physician to the Pennsylvania Hospital, delegate to the Continental Congress, Director General of Hospitals, succeeding Dr. Morgan, and was the leader of his profession for many years.

Dr. Adam Kuhn and Dr. Benjamin Rush were added to the faculty in 1768 and 1769, the former becoming the president of the College of Physicians in 1808; and Dr. Rush became the most noted physician of his time, and held the first chair of chemistry established in America; he added much to the literature of his profession; he is referred to as the Sydenham of America.

Dr. George de Benneville and Dr. John Jones, who was physician to both Washington and Franklin; and Dr. Jonathan Potts, of Pottstown and Reading, served with distinction during the Revolution; others associated with this army service were: Dr. Barnabas Binney, Dr. Samuel Kennedy, of Chester County, and Dr. Bodo Otto, of Reading. Other great physicians of that early day include the names of Dr. Samuel Griffitts, Dr. Philip Syng Physick, known as the "Father of American Surgery," Dr. George Glenworth, Dr. Benjamin Smith Barton, Dr. Cadwalader Evans, Dr. Patrick Baird, Dr. Samuel Preston Moore, Dr. John Redman, the preceptor of Dr. Rush; Dr. Samuel Bard, who organized the Medical School in Columbia University; Dr. Casper Wistar, the distinguished teacher of anatomy, and others. Contemporary with these Philadelphia physicians were: Dr. Joseph Priestley, the distinguished physician and scientist, who escaped persecution in England and lived his later days in Northumberland, where he added much to his already noteworthy reputation; Dr. William Pepper, Dr. James Hutchinson Leidy, Dr. William Gibson, Dr. J. Redman Coxe, Dr. George B. Wood, Dr. John Carson, Dr. William Potts Dewees, Dr. Thomas Chalkley Jones, Dr. Samuel George Morton, Dr. Nathaniel Chapman, Dr. George McClellan, father of Major General McClellan, who founded the Jefferson Medical College in 1825, and others. Dr. McClellan also founded the third medical school in Philadelphia, as the Department of Medicine of Pennsylvania College at Gettysburg, in 1841.

The fourth school, the Philadelphia College of Medicine, was established in 1847 by Dr. James McClintock. Franklin Medical College was the fifth, incorporated in 1846, but only lasted through two sessions, when the Female Medical College of Pennsylvania was founded in 1850; out of which organization has developed the Woman's Medical College of Pennsylvania, the first college in the world regularly organized for the medical instruction of women; the name being changed in 1867 to the one which it now bears. Incorporated March 11, 1850, its sessions began October 12, following, with forty students and a faculty of six members. A member of the first graduating class, Dr. Ann Preston, was the first woman to have a place on the faculty, later becoming the dean, since which time many women physicians have held professorships, and the chair of obstetrics has regularly been filled by a woman since the appointment of Dr. Emeline H. Cleveland, in 1862. A maternity hospital was added in 1903; dispensary in 1904. During the seventy-

fifth anniversary, in 1925, a movement was inaugurated for new buildings and permanent endowment. As is usual when the foremost women are at the helm, and in this case they were led by Mrs. James Starr, LL. D., president of the Board of Corporators, a site was selected at Henry Avenue and Abbottsford Road, which was purchased in 1926, and in October, 1929, the erection of the first building and the expansion program was begun. The college and hospital activities were transferred to the new building in September, 1930. Unique among institutions in Philadelphia, which has always been recognized the world over as the great medical center, is this Woman's Medical College of Pennsylvania, the only such institution devoted exclusively to the education of women in medicine in the Western Hemisphere. It has a brilliant history in the past and certainly a glowing future ahead, as its many graduates annually take their places in the practice of the art of medicine.

The seventh medical school to be established in Pennsylvania was the Medico-Chirurgical College, which had its inception in 1848, in a society rather than a teaching institution. It was incorporated in 1850, and was changed to a teaching body by act of Assembly, April 10, 1867. The most recently established medical school in the Commonwealth is the Department of Medicine in Temple University of Philadelphia, opened in 1901.

Sharing the glories of the University School of Medicine is the famous Jefferson Medical College. The "bold, brilliant, and energetic Dr. George McClellan" crystallized the sentiment, and Jefferson graduates are to be found in every remote section of the globe. The first faculty serving under Dr. McClellan included Dr. John Eberle, Dr. Joseph Green, Dr. Benjamin Rush Rhees, Dr. Francis S. Beattie, and Dr. Nathan Regno Smith. Other men who helped to make history at Jefferson are: Drs. Samuel D. Gross, Franklin Bache, William P. C. Barton, Joseph Pancoast, John Kearsley Mitchell, Robley Dungleson, Thomas D. Mutter, Alfred Stille, John Barclay Biddle, and Jacob M. DaCosta.

Allied with the work of the School of Medicine in the University is the Evans Dental Institute. Its history is romantic. It is endowed by that famous Philadelphia dentist, Dr. Thomas W. Evans, who, in a moment of glory, saved the life of the Empress Eugenie, and took her out of Paris after the battle of Sedan. The cab in which he carried her away is to be seen today in the museum of the institute.

Physicians of the past, not already named, who were eminent in the medical history of Philadelphia, include: D. Hayes Agnew, famous surgeon, who was called to Washington to attend President Garfield at the time of his assassination; Francis X. Dercum, authority on nervous diseases; John B. Deaver, the great surgeon; William S. Forbes, father of the anatomical law of Pennsylvania; John H. Packard; Thomas A. Andrews, who made the post-mortem on the Siamese twins; William L. Rodman, professor of surgery at Medico-Chirurgical; J. Marion Sims, founder of gynecology; J. Ewing Mears, one of the first surgeons to use antisepsis in Philadelphia (at St. Mary's Hospital); James M. Barton, surgeon; Oscar H.

Allis; Thomas Kirkbride, for forty-three years physician in charge of the Department for the Insane of the Pennsylvania Hospital; Richard J. Levis, master operator; John H. Brinton; Frank Maury; John B. Roberts; W. Joseph Hearn, the famous anesthetist; Hunter McGuire, who attended Stonewall Jackson on his deathbed; Edward A. Spitzka; Jacob Solis-Cohen; Horatio C. Wood; William F. Norris; Ernest LaPlace, medical director at Misericordia Hospital; R. A. F. Penrose; William Goodell; John Ashhurst; Louis A. Duhring; J. William White; Harvey Shoemaker, medical chief at Lankenau Hospital; John H. Musser; Richard M. Pearce, first occupant of the chair of Research of Medicine at University of Pennsylvania; and the late James M. Anders.

The earliest medical men in Western Pennsylvania came there with troops sent to rescue that great region from the French and their Indian allies. Among the surgeons with Braddock's ill-fated army, in 1755, were Dr. Thomas Walker, missionary general, and Doctors Anderson, Calhoun, Craik, and Mercer. It was Dr. Craik who dressed Braddock's wounds after his defeat, July 9, and Dr. Hugh Mercer, who became a Pennsylvanian, served as general in the Revolution, and died heroically at the battle of Princeton.

Among the early physicians, whose professional qualifications and characters should perpetuate their memory in this western country, is Dr. David Marchand, who settled near Greensburg in 1770, built up a large practice, and earned a deserved reputation until his death, July 22, 1809. He built a two-story stone house near his home as a private hospital, the first in America west of the Allegheny Mountains. He left three sons, all of whom became eminent physicians.

Colonel George Washington gave a dinner in Pittsburgh, in 1770, at which one of the guests was Dr. John Connolly, of Lancaster, who later became interested in the land-grabbing schemes of Governor Dunmore, of Virginia; became a Tory at the outbreak of the Revolution, and finally succeeded in leaving a dubious reputation. A distinguished soldier and physician was Dr. Edward Hand, who came to America as surgeon of the 18th Royal Irish Regiment, but who resigned his commission and practiced his profession in Pittsburgh. He espoused the cause of the Colonies in the Revolution, rose to the rank of brigadier general, and was, for a time, commandant at Fort Pitt. He lived his later life at Lancaster, where he died September 3, 1802. Another commander at Fort Pitt, in 1781, was General William Irvine, an educated physician, who had served seven years as surgeon on a British man-of-war. He was a patriot during the Revolution, after the war settled at Carlisle and attained deserved success. Dr. John Knight, of Fayette County, was surgeon in Colonel William Crawford's ill-fated expedition against the Western Indians, was captured and together with his commander was prepared for burning at the stake, but fortunately made a miraculous escape.

Other early physicians were: Dr. John David Schoeff, the first person to cross the Allegheny Mountains in a carriage, in 1783; Dr. Nathaniel Bedford, Dr. John F. Carmichael, Dr. Peter Brunot, Dr. Andrew Richardson, all of whom settled in

Pittsburgh before 1800. Dr. James Francis, of Connellesville, Dr. Benjamin Stevens and Dr. Daniel Sturgeon were practicing in Fayette County in the eighteenth century. Dr. Absalom Baird, a hero of the Revolution, located in Washington after the war; Dr. Hugh Thompson, Dr. Alexander Gaston, Dr. John Culbertson, Dr. William Bachly, Dr. Samuel McFadden, Dr. David Wishart, Dr. Joseph Doddridge, and Dr. John J. Lemoyne and his son, Dr. Francis Julius Lemoyne, all attained eminence in their profession in Washington County. Dr. John Julius Lemoyne began practice in Washington, Pennsylvania, in 1797, and there built the first crematory in America.

The Mercy Hospital was opened in Pittsburgh in 1847; the Western Pennsylvania Hospital opened in 1853. A thriving medical school, begun as the Western Pennsylvania Medical College, incorporated June 30, 1883, and on June 1, 1892, became connected with the Western University of Pennsylvania, now the great University of Pittsburgh. The Department of Pharmacy was absorbed when the Pittsburgh College of Pharmacy, incorporated September 23, 1878, was added to the university, April 16, 1896; the Dental Department, by an agreement with Pittsburgh Dental College, incorporated April 29, 1874, was added on April 16, 1896.

Outside of Philadelphia and the western part of Pennsylvania, of which Pittsburgh is the center, there have been numerous physicians of ability and great usefulness, too many to name any except a very few. As early as 1750 Dr. J. M. Otto, a German surgeon, emigrated to Northampton County, and Dr. G. H. Bute, Dr. Traill Green, and Dr. Henry Detwiller all gained enviable reputations in that historic county. Dr. Hans Heinrich Neff was the first regular practitioner in Lancaster County; Dr. John Light Atlee was justly esteemed, as was his brother, Dr. Washington Lemuel Atlee. Dr. John Houston was a surgeon in the Continental Army, and the Musser family produced nearly a score of successful physicians. At the beginning of the nineteenth century Dr. John Agnew was the leading physician in the vicinity of Gettysburg, and Dr. William H. Crawford became most eminent in his practice there. Dr. William Irvine was the most celebrated early physician at Carlisle. Dr. Thomas Story Kirkbride, the renowned alienist, was a native of Bucks County. Dr. Bodo Otto, and his sons, Bodo Otto, Jr., and John A. Otto, and the Hiesters, Isaac, Frederick M., and John P., were among the most distinguished physicians of Berks County. Dr. Joseph Priestley, Dr. William Plunket, and Dr. Thomas Cooper form an early trio of the most eminent physicians of their time, all residents of Northumberland County, and to this list should be added Dr. James Dougal, the first physician at Milton, and the first of four generations of successful physicians to practice there. Dr. Benjamin Allison, Dr. William Kent Lathey, Dr. Thomas Lyon, Dr. W. H. Rankin, and Dr. John Redman were successful early physicians of Lycoming County. In 1755 Christian Frederic Post, the Moravian Indian Missionary, while at Wyoming, had his leg so severely hurt that an Indian runner was dispatched to Bethlehem and brought Dr. J. M. Otto,

who remained a week with his celebrated patient. The first recorded visit of a physician in the Wyoming Valley. Dr. William Hooker Smith, Dr. Joseph Sprague, and Dr. Gustin were in the battle of Wyoming; Dr. Nathaniel Giddings and others became prominent practitioners in Luzerne County. Dr. Henry Hollister, Dr. Benjamin H. Troop, Dr. I. F. Everhart, and Dr. A. P. Garner were among the first to gain prominence in medicine in Lackawanna County. Dr. George Halberstadt, Dr. John T. Carpenter, Dr. George Brown, Dr. G. O. O. Santee, and Dr. Joel Thompson Boone, were early successful physicians in Schuylkill County. Dr. John Andrews attended General James Potter and his family in the early days of what is now Centre County, and Dr. John Conrad Bergman and Dr. John Harris were most eminent practitioners there. Dr. Robert VanValzah and Dr. Charles Beyer were early widely known doctors in Union County. Dr. R. Armstrong, Dr. A. G. Walls, Dr. J. H. Hays, and Dr. R. B. Watson were early physicians of great worth in Clinton County. Dr. Frederick Spiegel was the first physician at Allentown, and Dr. Christian Frederick Martin, and his twenty-five descendants, who were practitioners, and Dr. William Wesselhoeft, the homœopathist, were among the most distinguished of the early physicians of Lehigh County. Dr. William Potts Dewees, of Pottstown, earned more than a local reputation. Dr. John Houston, Dr. David Jameson, Dr. George Stevenson, Dr. Robert Kennedy, and Dr. John Gottlieb Morris may be counted among the most eminent of the earliest doctors in York County. Dr. Paul Jackson, Dr. John Cochran, and Dr. Isaac Taylor Coates are of a long list of eminent physicians of Delaware County. Dr. John Vietch Shoemaker was most successful at Chambersburg. Early physicians in Westmoreland County include Dr. Jacob Jennings, Dr. John Postlethwaite, Dr. John Culbertson Wallace, and Dr. T. G. Symonds. The first resident physician at Erie was the above-mentioned Dr. Wallace, and Dr. Peter Faulkner and his two sons, Drs. William and Robert Faulkner, were also distinguished in medicine. The earliest physicians in Butler County were those in the community settlement of Rev. Rapp, at Harmony. The pioneer physician outside of this settlement was Dr. George Miller, a native of Washington County. Dr. John W. Jenks, Dr. Jonathan Nichols, Dr. William James McKnight, and Dr. C. M. Matson were prominent in the early life of Jefferson County. Dr. James M. Stewart, the first president of the Indiana County Medical Society was a distinguished physician of that region. Dr. T. G. Symonds, Dr. George R. Espy, and Drs. Nathaniel and Samuel G. Snowden were prominent in Venango County. Dr. Samuel Adams was the first physician, and his son, Dr. Milo Adams, quite as celebrated, in Beaver County.

The Philadelphia Dispensary was established in 1786 through the efforts of Dr. Samuel P. Griffitts, and is the first institution of its kind in America, and has served without any abatement of its power and influence to the present day.

The first medical library was founded in Philadelphia in 1763; there also was established the first university department of research medicine, and the first for surgical research.

Pennsylvania has also been a leader in the effort to care for and relieve its unfortunate insane patients. Public asylums or hospitals, thoroughly equipped for the humanitarian purpose, are now in existence in various parts of the Commonwealth, and are administered by the best medical talent that can be procured. The first of these beneficent institutions was the Pennsylvania State Lunatic Hospital, established at Harrisburg, under act of April 14, 1845, and opened in 1851. The Commonwealth owns and maintains the following hospitals for the insane: Allentown, Danville, Farview, Harrisburg, Norristown, Torrence, Warren, and Wernersville, and aids in the maintenance of the Dixmont Hospital. The Commonwealth also maintains the Laurelton State Village, Pennshurst State School, Polk State School, Selinsgrove State Colony for Epileptics, Cumberland Valley Institution for Mental Defectives, and the Elwyn Training School for Feeble-minded and Epileptics. The medical and surgical hospitals which are owned and maintained by the Commonwealth are at Ashland, Blossburg, Coaldale, Connellesville, Hazleton, Locust Mountain, Mercer, Nanticoke, Philipsburg, Scranton, Shamokin, and the Soldiers' and Sailors' Home at Erie. The Commonwealth also aids nearly every medical and surgical hospital in Pennsylvania, and many homes for the indigent, aged and crippled. The Federal Government maintains hospitals for the sick and insane veterans of the country's wars, those in Pennsylvania being located at Aspinwall and Coatesville.

The first professional society among physicians in America was the Philadelphia Medical Society, organized February 4, 1765, but it soon expired. The American Medical Association was organized in Philadelphia in May, 1847, in consequence of the reputation acquired by the establishment of the first medical colleges in the United States. Several efforts had been made to form an association with the view of checking the multiplication of medical colleges to the dereliction of professional excellence. The first such convention was held in New York City in 1846, but it failed for lack of representatives from as many as half of the medical colleges in the country. Another meeting was called for Philadelphia, in May, 1847, and the first resolution adopted was in reference to the personal qualifications of young men before being received as students in physicians' offices. The association was established, and Dr. Nathaniel Chapman became its first president, Dr. Alfred Stille secretary, and Dr. Isaac Hays treasurer; all were residents of Philadelphia. It is difficult to overestimate the blessing that the formation of this association has been to the medical profession of the United States.

The "American Journal of Medical Sciences" was established in Philadelphia in 1820, and has distanced all rivals, and is today the recognized organ of medical expression.

An interesting episode in the history of medicine in Pennsylvania was when the International Medical Congress was held in Philadelphia during the Centennial Exposition of 1876, which brought together a large number of the most distinguished medical personages from this and all other countries.

The Department of Health was created by the act of April 27, 1905, when it took the place of the former State Board of Health, with largely increased and broader powers. As recently reorganized by the Administrative Code, the department now exercises and performs all the powers conferred and duties heretofore imposed by law upon the State Board of Health, or any member, committee or officer thereof, including the secretary. The duty of the department is to protect the health of the people, and to determine and employ the most efficient and practical means for the suppression of disease. The wide powers given to the department, and the wise and capable administration of that trust has earned for the Commonwealth a national reputation for the efficiency of its health problems.

Dr. Samuel G. Dixon was the first Commissioner of Health, June 6, 1905, and served most efficiently until the day of his death, February 26, 1918; Dr. B. Franklin Royer, as acting commissioner, served from the death of Dr. Dixon until March 1, 1919, when he was succeeded by Dr. Edward Martin, who served as commissioner until February 5, 1923, when Dr. Charles H. Miner became the commissioner, and on the reorganization of the department, became the first Secretary of Health, June 15, 1923, serving until January 18, 1927, when Dr. Theodore B. Appel, the present eminent secretary, assumed the high office. The only Deputy Commissioner of Health was Dr. John D. McLean, June 25, 1919, to March 1, 1923, when Dr. William G. Turnbull succeeded him as Deputy Secretary of Health, who was in turn succeeded by Dr. J. Bruce McCreary, November 1, 1928, the present incumbent.

Homœopathy—Homœopathy sprang into life about the beginning of the nineteenth century, and subjected the medical world to another of the convulsions which have characterized medical history since the earliest ages. This new school of medicine was introduced into America in 1825, and made its first appearance in Pennsylvania when, on July 24, 1828, Dr. Henry Detwiller, of Hellertown, gave the first dose of that kind of medicine.

The first medical college in the world to teach the distinctive method of medical treatment originated by Dr. Samuel Hahnemann was the North American Academy of Homœopathic Medicine, located at Allentown, and organized April 10, 1835. Dr. Constantin Hering, an eminent physician, was the first president and principal instructor. The real promoters of the college, however, were Doctors Henry Detwiller and William Wesselhoeft. The instruction was conducted in the German language, and consequently it never became popular, and soon closed. This initial venture was followed by the institution of the Homœopathic Medical College of Philadelphia, incorporated April 8, 1848. Several reorganizations took place in the faculty until 1867, when a thorough reorganization occurred, and the name was changed to Hahnemann Medical College of Philadelphia, since which time it has taken its place among the leading medical schools of the country, and because it is a continuation of the first such college it is now the oldest homœopathic college in America.

The formation of homœopathic societies had its origin in Pennsylvania, when on April 10, 1833, Dr. Hering and four physicians and several laymen formed the Hahnemannian Society. In 1838 the Homœopathic Medical Society of Philadelphia was organized; a national organization was perfected in New York City, April 10, 1844. The Homœopathic Medical Society of the State of Pennsylvania, the principal organization in the Commonwealth, had its origin in a meeting in Pittsburgh June 5, 1866, since which time the society has maintained a continuous and healthful existence.

Osteopathy—Osteopathy is the youngest classified system of the healing arts. The founder of this branch was Andrew Taylor Still, of Kentucky, whose ancestors were Pennsylvanians. Dr. Still served as a staff surgeon under General John C. Fremont in the Civil War, and afterwards was a member of the first Kansas Legislature. He established the original school for teaching this new philosophy of health at Kirksville, Missouri, in 1893. The first law governing its practice in Pennsylvania was enacted May 19, 1909, and it has been amended by eight subsequent acts of Assembly.

The general practice is under the control of a board of five members of the profession, and operates within the Department of Public Instruction. This board has licensed 1,246 practitioners since 1909.

The Philadelphia College of Osteopathy is the only college of this school of the healing arts in the State. It was founded in 1899 and has recently occupied its new magnificent structure at Forty-eighth and Spruce streets, Philadelphia. It possesses the most modern scientific facilities and a large corps of teachers. The student body numbers 400. It draws students from the whole Atlantic seaboard, and is the only large institution of its kind in the East. Its dean, Edgar A. Holden, is a capable administrator. It maintains an excellent hospital in connection therewith which receives State appropriations.

Other hospitals of the State are: The Baker Hospital of Lancaster, an excellent institution with a highly trained surgeon at the head, Dr. Ralph Baker. The Bashline-Rossman Hospital, Grove City, Pennsylvania, a very large institution in the western part of the State, is under the direction of a very competent surgeon, Dr. O. O. Bashline, and his assistant, Dr. Rossman.

There are also two sanitariums: Dufur Osteopathic Sanitarium for Nervous and Mental Diseases, at Ambler, Pennsylvania, and Fuller Osteopathic Sanitarium at Willow Grove, Pennsylvania.

The profession is organized in a State body, termed "The Pennsylvania Osteopathic Association." This association has various divisional societies throughout the State: Central Osteopathic Society, with headquarters at Harrisburg. Lehigh Osteopathic Society, with headquarters at Allentown. Western Osteopathic Society, with headquarters at Pittsburgh. Northeastern Osteopathic Society with headquarters at Scranton. Philadelphia County Osteopathic Society, with headquarters at Philadelphia.

CHAPTER XI.

BENCH AND BAR.

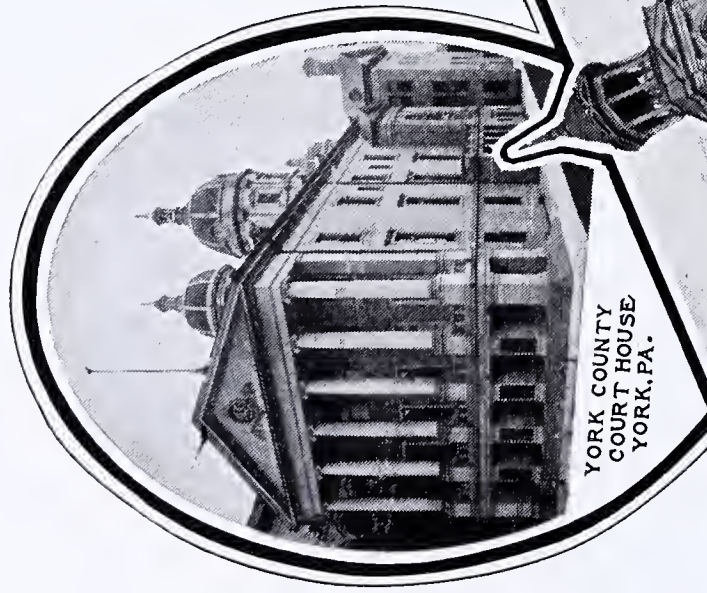
The early judicial history of Pennsylvania presents striking features of interest to two classes in the community—the professional lawyer and the student of history. To the former it must be a matter of curiosity and interest to study the first rude means devised to administer justice between man and man—to discern among the transactions of those early times the rise and development of institutions and practices. But to the student of history the subject affords a different kind of interest, when he finds gratification in the manner, customs, and modes of thought once predominant in those early courts. In them he finds traces of the past life of the Nation, learns of the matters which then interested the people, the nature of their industries, the extent of their commerce, the character of their education, the attention paid to their morals, and even the depth of their religious convictions.

Nearly a month after the signing of the Charter, March 4, 1681, King Charles II, on April 2, issued a declaration which informed the inhabitants and planters of the Province that William Penn, their absolute proprietary, was clothed with all the powers and preëminences necessary for government. A few days later, April 8, the Proprietary addressed a proclamation to the inhabitants of Pennsylvania, in which he appointed his cousin, Captain William Markham, to be Deputy Governor. In his commission there were five items of instructions, the fourth being “to erect courts, appoint sheriffs, justices of the peace, etc.”

This power to erect courts of justice and to appoint all judicial officers in and for the Province of Pennsylvania was thus conferred, by the express terms of the Charter, upon the Proprietary. In deference to the wishes of the inhabitants, however, Penn was willing to forego to some degree this exercise of the extraordinary right, when the concurrence of the Assembly was invariably required to the bill for the erection of a court. The judges, during the early years of the Province, were also selected by the Provincial Council, the members of which were elected annually by the people, in accordance with provisions of the Frame of Government.

The county courts of what is now Pennsylvania had their origin in 1673, under the government of James, Duke of York, and were established “to decide all matters under twenty pounds without appeal, and to have exclusive jurisdiction in the administration of criminal justice, with an appeal, however, in cases extending to ‘life, limbo, and banishment,’ ” to the Court of Assizes, in New York. These courts usually consisted of five or six justices, who met quarterly. No one learned in the law presided on the bench, and no attorney was allowed to practice for pay.

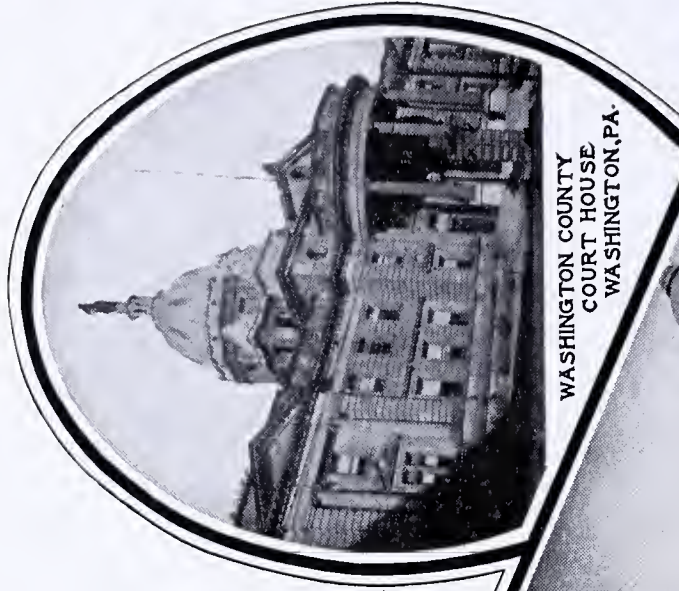
The first court held in the Province of Pennsylvania, the records for which are preserved, was that held in Philadelphia on January 11, 1682. There were six bills



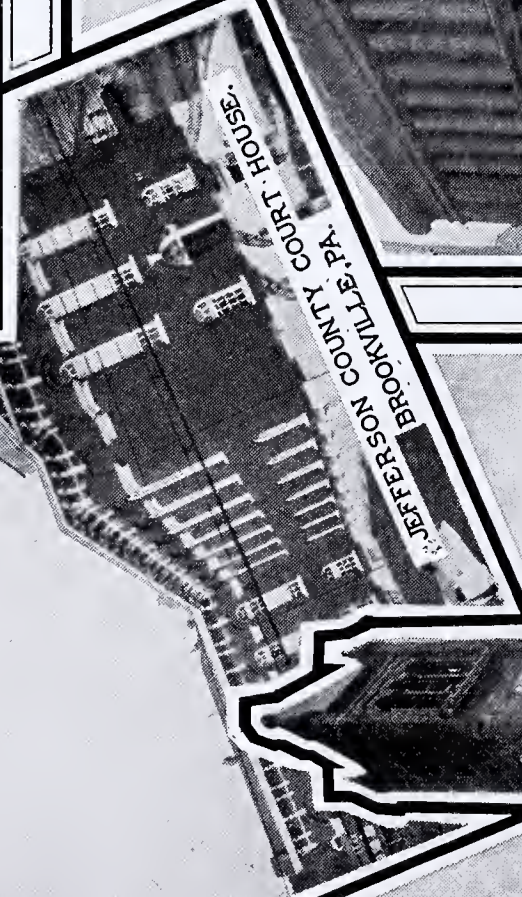
YORK COUNTY
COURT HOUSE
YORK, PA.



SOMERSET COUNTY COURT HOUSE, SOMERSET, PA.



WASHINGTON COUNTY
COURT HOUSE
WASHINGTON, PA.



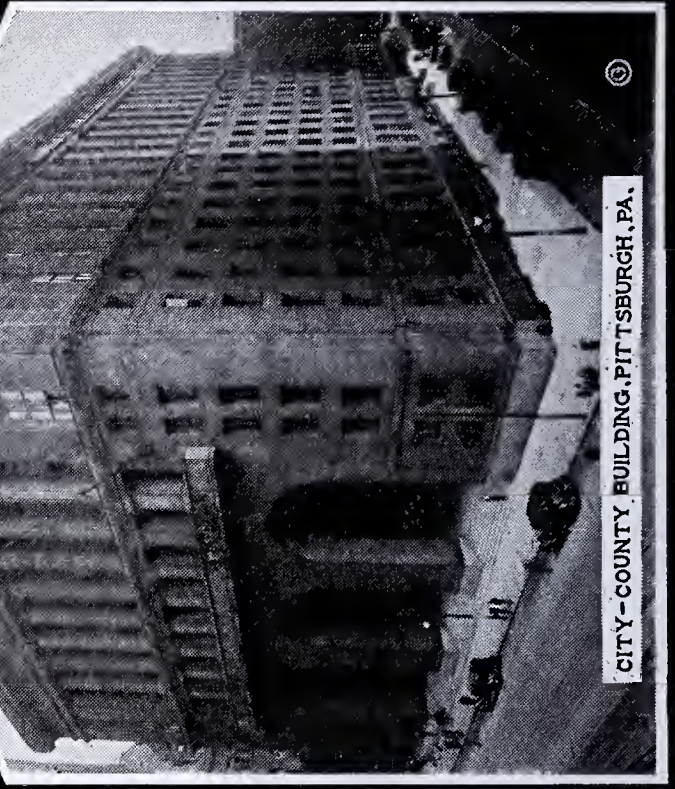
JEFFERSON COUNTY COURT HOUSE,
BROOKVILLE, PA.



ARMSTRONG COUNTY COURT HOUSE,
KIT TANNING, PA.



FAYETTE COUNTY COURT HOUSE, UNIONTOWN, PA.



CITY - COUNTY BUILDING, PIT TSBURGH, PA.



BUTLER COUNTY COURT HOUSE, BUTLER, PA.

presented to the Grand Jury, all but one having to do with the highway, the exception being a petition for a courthouse. These tribunals lacked almost every element of distinctly English procedure, but were continued by Penn. Justices of the peace were from time to time commissioned, some for the whole Province, others for only a particular county; and their attendance was enforced by the penalty of a fine. The panel of twelve jurymen was drawn in a highly primitive manner, the names of the freemen being written on small pieces of paper, put into a hat and shaken, when a child drew therefrom the names of forty-eight, who stood for the sheriff's return. Except in cases of life and death, the conclusions of the majority were allowed to prevail.

The civil jurisdiction of the county courts was first distinctly defined in 1683, when all actions of debt, account or slander, and all actions of trespass were by Act of Assembly declared to be originally cognizable solely by them. Other jurisdiction was given them by subsequent action of the Legislature. The justices interfered to promote and defend the popular interests in all matters that were of public concern. In very early times they granted letters of administration, superintended the laying out of roads, apportioned the town lots to responsible applicants, took acknowledgments of deeds, and registered the private brands and marks of owners of cattle.

These early courts were vested with criminal jurisdiction in all save cases of heinous crimes; treason, murder, and manslaughter being outside their cognizance. Trials for larceny, swearing, laboring on Sunday, assault and battery, shooting or maiming the prosecutor's hogs, unduly encouraging drunkenness, selling rum to the Indians, and offenses against the public morality and decency constituted the great bulk of the criminal business. Lying in conversation was fined half a crown; drinking healths which might provoke people to unnecessary and excessive drinking was fined five shillings; the sale of beer made of molasses at more than a penny a quart was fined five shillings for every quart so sold; no person could "smoak tobacco in the streets of Philadelphia or New Castle by day or night, on penalty of a fine of twelve pence, to be applied to the purchase of leather buckets and other instruments against fire." Any person "convicted at playing cards, dice, lotteries or such like enticing, vain and evil sports and games" was to pay five shillings, or to be imprisoned five days at hard labor, while those who introduced or frequented "such rude and riotous sports and practices as prizes, stage plays, masques, revels, bull baitings, cock fightings, and the like" were either to forfeit twenty shillings or be imprisoned at hard labor for ten days. Smoking tobacco in the court room was an heinous offense.

An excellent law in these early days provided "that whereas there was a necessity for the sake of commerce in this infancy of things, that the growth and produce of this Province should pass in lieu of money, that, therefore, all merchantable wheat, rye, Indian corn, barley, oats, pork, beef and tobacco should pass current at the market price." The people availed themselves largely of this provision, and

frequently gave bonds to each other acknowledging their debts in kinds. Judgments were accordingly sometimes entered "for 172 pounds of pork and two bushels of wheat, being the balance of an account brought into court," or for "32 shillings for a gun, and 150 pounds of pork for a shirt," while, perhaps, the climax was reached in an entry of judgment for "one thousand of six-penny nails, and three bottles of rum."

The early courts were unusual peacemakers and made peculiar awards. In Chester County, in 1687, in an action of an assault and battery by Samuel Baker against Samuel Rowland was this award: "Samuel Rowland shall pay the lawful charges of this court, and give the said Samuel Baker a Hatt, and so Discharge each other of all manner of Differences from the Beginning of the World to this Present day." The sentences were not unusually severe; the whipping post, the pillory, and the imposition of fines were usually resorted to as punishments in preference to long terms of imprisonment. The services of the culprit were more desirable than to keep him, at the public expense, behind prison walls.

The courts exercised a supervision over all bond servants, regulated the sale of their time, afforded summary relief if they were abused by their masters, and punished them with stripes or the pillory if they attempted to escape, and took care that they were at liberty to purchase their freedom on reasonable terms. The courts were also intrusted with other duties, as the minutes of the Provincial Council, February 12, 1687-88, reveal that the County Court of Philadelphia was ordered "to cause stocks and a cage to be provided," and was required "to suppress the noise and drunkenness of Indians, especially at night, and to cause the crier to go to the extreme extent of each street when he has anything to cry, and to put a check to horse racing." Masquerading was a serious offense, as was the performance of any work on the Sabbath.

At the time of the formation of the Province a belief in witchcraft was everywhere prevalent in the British American colonies. Many supposed witches were hanged in Massachusetts, but there has been only a single trial for witchcraft in the history of Pennsylvania, and over this one, held February 27, 1683, William Penn himself sat as the court. The evidence adduced against the accused, Margaret Mattson and Yethro Hendrickson, was of the most trifling character, and such as now would be scouted from the witness box of a justice of the peace.

The honor of discharging the highest judicial office in Pennsylvania is to be attributed to Nicholas Moore, appointed by the Proprietary in pursuance of the act of 1684. Judge Moore had arrived in the Province in 1682, coming with William Penn, and at that time was a physician, the president of the Society of Free Traders, and a large purchaser of land in the Province. He was not a Quaker, but earned their confidence to such an extent that he was a member of the first Assembly, and made its Speaker. He soon came in collision with the Quakers, denounced them, and was in consequence impeached. During the trial he acted so strenuously that he was placed in the custody of the sheriff. While he was proven to be guilty

of the charges there seemed to be no way in which he could be shorn of his office, and his case was from time to time postponed until more important matters took its place in the public mind. He was finally dismissed and this ended his public career. He died in 1689.

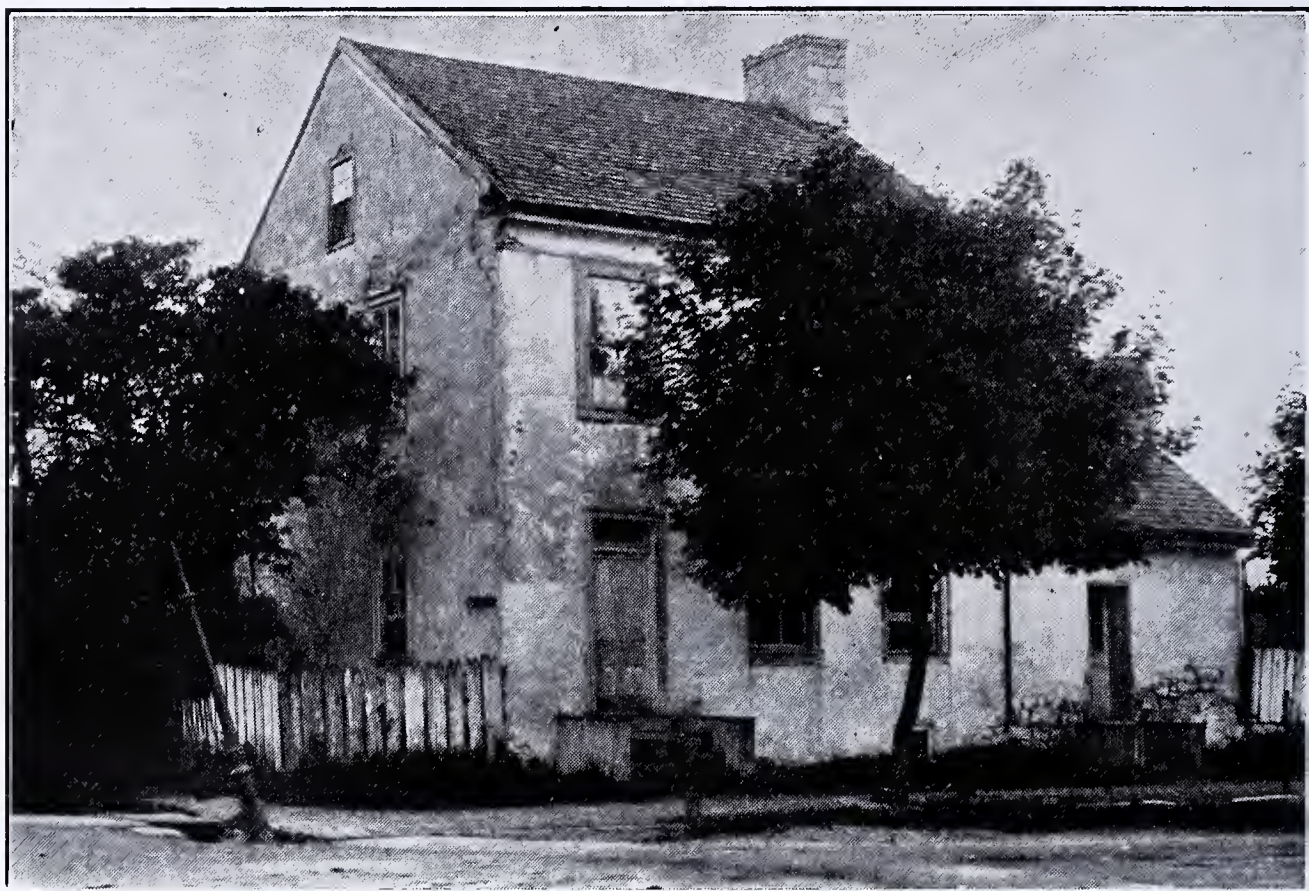
There were four lawyers in the Province at this period: David Lloyd,* George Lowther, Thomas Clark, and Thomas MacNamara.

One of the most interesting and important events in the early legal annals is that the modern principles of the law of libel, as enforced in England and all the English-speaking countries, were first established in Pennsylvania. In a case against Peter Boss, tried in 1692, evidence of the truth of the alleged libellous statements were admitted by the court, and in the concurrent trial of William Bradford it was left to the jury to say whether or not the printed paper was seditious in character. Even more important was the act of Andrew Hamilton, who went from Philadelphia to New York to conduct the case of John Peter Zenger, the printer, accused of libel. Hamilton contended for the principles which had been decided in Pennsylvania. Addressing the court, Hamilton admitted the fact of the publication, and boldly asserted that the matters charged were true, and, therefore, no libel. Being under no awe of the court, he ridiculed the decision of the judges, that a libel was the more dangerous for being true, and by wit, sarcasm, and keen legal weapons, he foiled the sophistry of the court, and by a most eloquent and logical appeal to the jury to protect, in the case of Zenger, the poor printer, and the nobler cause of liberty. The jury returned a verdict of acquittal. Hamilton was carried from the courtroom upon the shoulders of the delighted people. He was given the freedom of the City of New York and presented with the key in a gold box. He charged no fee for his service. Morris is reported to have said: "The trial of Zenger was the germ of American freedom—the morning-star of that liberty which subsequently revolutionized America." The trial led to the passage of the Fox Libel Act in England. It likewise gave to Hamilton, and the Philadelphia lawyers, a reputation which has endured to our own time. The story of this trial is also interesting in the fact that the venerable Hamilton was an Attorney General of Pennsylvania, and the father of James Hamilton, later a Governor of the Province.

To this same Andrew Hamilton we are indebted for the erection of the Pennsylvania State House, which after the Revolutionary War became widely known as the cradle of liberty, and by its popular and now national name of Independence Hall. Hamilton's rival at the bar was Joseph Growden; while Joseph Galloway and John Dickinson succeeded Hamilton and Growden in leadership prior to the Revolutionary War. At the same time James Wilson, of Carlisle, became an impos-

*Lloyd had been sent to the Province by William Penn to act as Attorney General. He was a man of pleasing manners, persistent energy, and natural abilities. He held many important offices, and developed a sincere attachment to the popular interests of the Province. He was, in 1703, pitted against James Logan and the Proprietary in defense of the popular rights, and he continued for years an object alike of fear and of hatred to the Proprietary. He was chosen many times to be Speaker of the Assembly; in 1718 he was Chief Justice. He prepared the earliest compilation of the laws, printed by Andrew Bradford in 1714, and wrote other legal works. He died April 5, 1731, aged seventy-eight years.

ing figure, whose legal work was, perhaps, more important than that of any other Pennsylvanian, and ranks with that of any other American lawyer. After the close of the Revolution, Wilson established the first law school in America, and became its first professor in law. The "Pennsylvania Packet" for December 25, 1790, said: "Wednesday evening the 15th instant, the Hon. Judge James Wilson, law professor in the College of Philadelphia, delivered his introductory lecture in the College-hall, Fourth below Arch Street. The President of the United States, with



**First Courts of Cumberland County Were Held In This Building
July 24, 1750 (Still Standing)**

his lady—also the Vice-President, and both houses of Congress, the President, Thomas Mifflin, and both houses of the Legislature of Pennsylvania, together with a great number of ladies and gentlemen, were present; the whole composing a most brilliant and respectable audience." This was not a social event, but the actual opening of the law school of the present University of Pennsylvania. It was the first lecture on law delivered in America, and, in the true sense, here began legal instruction in the New World.

The judicial system of Pennsylvania consists, in the first place, of magistrates, aldermen and justices of the peace, who are elected. Magistrates have jurisdiction in civil cases involving not more than one hundred dollars, and justices of the peace have jurisdiction up to three hundred dollars. The Commonwealth is divided into fifty-eight districts, with a total of 121 judges of common pleas, and twenty-two judges of the several orphans' courts; there are also eleven municipal judges of Philadelphia, and seven judges of the County Court of Allegheny County. In each of the judicial districts the Court of Common Pleas has original jurisdiction in civil cases. The judges sit also in the courts of Quarter Sessions and Oyer and

Terminer, in which criminal cases are tried. There is no separate Court of Chancery in Pennsylvania, but there has been developed a system under which the principles of equity were worked out through common law forms. The courts of



First Courthouse at Sunbury

Common Pleas, however, are invested with equitable jurisdiction. The judges of these courts are in many of the counties also judges of the orphans' courts, having jurisdiction over the estates of deceased persons and of minors. In some of the counties there are separate orphans' courts.

The Superior Court is an intermediate Court of Appeals, consisting of seven judges, who are elected for a term of ten years, and who have appellate jurisdiction in cases involving not over two thousand five hundred dollars, and in appeals from the courts of Oyer and Terminer and Quarter Sessions, except in cases of felonious homicide.

The Supreme Court consists of a Chief Justice and six other Justices, elected for a term of twenty-one years, and ineligible for reëlection.

Legislative Reference Bureau—The Legislative Reference Bureau was created by the act of April 27, 1909, but was reorganized as a legislative agency by the act of May 7, 1923, which was subsequently amended by the acts of May 10, 1927, May 17, 1929, and May 6, 1931. The bureau was created for the use of the Members of the General Assembly, the Governor, the heads of agencies of the State Government, and such citizens of the Commonwealth as desire to consult the same.

The primary purpose was to provide an agency, with trained personnel, to draft and pass upon legislative bills and resolutions for introduction in the General Assembly by members; to advise members of the Legislature and legislative committees; from time to time to prepare for adoption or rejection by the General Assembly, codes, by topics, of the existing general statutes; and to engage in

research work on legislative questions and the history of legislation. The bureau does not give legal advice to private citizens, but upon request, furnishes copies of statutory laws on particular subjects where available. The employees of the bureau are not permitted to oppose or to urge legislation, or to reveal to any person outside the bureau the contents or nature of any matter not yet published without the consent of the person bringing such matter before the bureau.

The bureau is in charge of the director, who is elected biennially, before the first day of February in each odd-numbered year, by the Senate and House of Representatives in joint session, and is subject to removal by the General Assembly. The director must be qualified by experience, knowledge and ability to conduct the work of the bureau, and he appoints the assistant director and all other employees of the bureau and fixes their salaries.

FEDERAL JUDGES.

Pennsylvanians who have served as Associate Justices of the United States Supreme Court are the following: James Wilson, Henry Baldwin, Robert Cooper Grier, William Strong, George Shiras, Jr., and Owen J. Roberts.

Joseph Casey was Chief Justice of the Court of Claims of the United States, 1863-70.

Joseph Buffington, Presiding Judge of the United States Court of Appeals, since September 21, 1906.

United States District Judges—J. Whitaker Thompson, Oliver B. Dickinson, W. H. Seward Thomson, Frederic P. Schoonmaker, Robert M. Gibson, Albert Williams Johnson, William H. Kirkpatrick, Nelson McVicar, and Albert L. Watson.

Attorneys General of the United States—William Bradford, Benjamin Rush, Henry D. Gilpin, Jeremiah S. Black, Edwin M. Stanton, Wayne MacVeagh, Benjamin H. Brewster, Philander C. Knox, and A. Mitchell Palmer.

PENNSYLVANIA JUDGES.

Attorneys General of Pennsylvania—William Bradford, Jr., Jared Ingersoll, Joseph B. McKean, Walter Franklin, Joseph Reed, Richard Rush, Amos Ellmaker, Thomas Sergeant, Thomas Elder, Frederick Smith, Calvin Blythe, Philip S. Maclay, Samuel Douglass, Ellis Lewis, George M. Dallas, William B. Reed, Ovid F. Johnson, John K. Kane, John M. Reed, Benjamin Champneys, James Cooper, Cornelius Darrah, Thomas E. Franklin, James Campbell, Francis W. Hughes, John C. Knox, Samuel A. Purviance, William M. Meredith, Benjamin Harrison Brewster, F. Carroll Brewster, Samuel E. Dimmock, George Laer, Henry W. Palmer, Lewis C. Cassidy, William S. Kirkpatrick, William Uhler Hensel, Henry Clay McCormick, John P. Elkin, Hampton L. Carson, Moses Hampton Todd, John C. Bell, Francis Shunk Brown, William

I. Schaffer, George E. Alter, George W. Woodruff, Thomas J. Baldrige, Cyrus E. Woods, and William A. Schnader.

Chief Justices of the Supreme Court—William Crispin, Nicholas Moore, James Harrison, Arthur Cooke, John Simcock, Andrew Robeson, John Guest, William Clarke, Robert Mempesson, Joseph Growden, David Lloyd, Isaac Norris, James Logan, Jeremiah Langhorne, John Kinsey, William Allen, Benjamin Chew, Joseph Reed, Thomas McKean, Edward Shippen, William Tilghman, John Bannister Gibson, Jeremiah S. Black, Ellis Lewis, Walter H. Lowrie, George W. Woodward, James Thompson, John Meredith Read, David Agnew, George Sharswood, Ulysses Mercur, Isaac G. Gordon, Edward M. Paxson, James P. Sterrett, Henry Green, J. Brewster McCollum, John T. Mitchell, D. Newlin Fell, J. Hay Brown, Robert VonMoschzisker, and Robert S. Frazer.

Associate Justices—William Welsh, William Wood, Robert Turner, John Eckley, William Clarke, James Claypoole, Arthur Cooke, John Cann, John Simcock, James Harrison, Joseph Growden, Peter Alricks, Thomas Wynne, Griffith Jones, Edward Blake, William Salway, Anthony Morris, Cornelius Empston, Edward Shippen, William Biles, Robert French, Caleb Pusey, Thomas Masters, Samuel Finney, John Guest, Jasper Yeates, William Trent, Richard Hill, Jonathan Dickinson, George Roche, Robert Assheton, Jeremiah Langhorne, Thomas Greame, Thomas Griffiths, William Till, Lawrence Growden, Caleb Cowpland, William Coleman, Alexander Steadman, John Lawrence, Thomas Willing, John Morton, William Augustus Atlee, John Evans, George Bryan, Jacob Rush, Edward Shippen, William Bradford, Jr., Thomas Smith, Hugh Henry Brackenridge, John Bannister Gibson, Thomas Duncan, Molton Cropper Rogers, Charles Huston, Horace Binney, John Tod, Frederick Smith, John Ross, John Kennedy, Thomas Sergeant, Thomas Burnside, Richard Coulter, Thomas S. Bell, George Chambers, Ellis Lewis, Walter H. Lowrie, George W. Woodward, John C. Knox, Jeremiah S. Black, James Armstrong, James Thompson, William Strong, William A. Porter, Gaylord Church, John M. Read, David Agnew, George Sharswood, Henry W. Williams, Ulysses Mercur, Isaac C. Gordon, Edward M. Paxson, Warren J. Woodward, James P. Sterrett, John Trunkey, Henry Green, Silas M. Clark, Alfred Hand, J. Brewster McCollum, James T. Mitchell, Christopher Heydrick, John Dean, Samuel G. Thompson, D. Newlin Fell, J. Hay Brown, S. Leslie Mestrezat, William P. Porter, John P. Elkin, John Stewart, Robert Von Moschzisker, Robert S. Frazer, Emory A. Walling, Alexander Simpson, Jr., Edward J. Fox, John W. Kephart, Sylvester B. Sadler, William I. Schaffer, George W. Maxey, John B. Drew, and William B. Linn.

President Judges of the Superior Court—Charles E. Rice, George B. Orlady, William D. Porter, and Frank M. Trexler.

Judges of the Superior Court—Charles E. Rice, James A. Beaver, Howard J. Reeder, George B. Orlady, John J. Wickham, Edward N. Willard, Henry J. McCarthy, Peter P. Smith, William W. Porter, William D. Porter, Dinner Beeber, John I. Mitchell, Thomas A. Morrison, John J. Henderson, John B. Head, John W. Kephart, Frank M. Trexler, J. Henry Williams, William H. Keller, William B. Linn, Robert S. Gawthrop, Jesse E. B. Cunningham, Thomas J. Baldrige, James B. Drew, J. Frank Graff, John G. Whitmore, Joseph Stadfeld, William M. Parker, and Arthur H. James.

Native Pennsylvanians Who Have Served as Judges of Higher Courts—Elma Gates Albert, born in Hampton, Associate Justice, Supreme Court, Iowa; Wilbur McClure Alter, born in Allegheny, Justice, Supreme Court, Colorado; George M. Bourguin, born in Warren County, United States District Judge, Montana; Henry Clay Conrad, born in Bridesburg, Associate Justice, Supreme Court, Delaware; Sidney Ernest Ellsworth, born in Pittsburgh, Supreme Court, North Dakota; Frederic Ernest Fuller, born in Auburn, United States District Judge, Alaska; Adolph August Hoehling, born in Philadelphia, Associate Justice Supreme Court of District of Columbia; William Easton Hutchinson, born in Oxford, Associate Justice, Supreme Court, Kansas; John Clark Knox, born in Waynesburg, United States District Judge, Southern New York; Wallace McCamant, born in Hollidaysburg, Justice Supreme Court, Oregon, also served as President General, Sons of American Revolution; Emmett Newton Parker, born in York County, Chief Justice, Supreme Court, Washington; William Brandon Rose, born in Grove City, Supreme Court Judge, Nebraska; Daniel Newton Straup, born in Juniata County, Justice Supreme Court, Utah; Josiah Alexander Van Orsdel, born in New Bedford, Justice Court of Appeals of District of Columbia; Charles Edgar Woodward, born in Fayette County, Attorney General, Illinois, and United States District Judge, Northern Illinois, since 1929.

Lawyers who have served as Governor of Pennsylvania are the following: Edward Shippen, Robert Hunter Morris, Joseph Reed, Thomas McKean, George Wolf, Francis Rawn Shunk, William F. Johnston, James Pollock, Andrew G. Curtin, John F. Hartranft, Henry M. Hoyt, Robert E. Pattison, James A. Beaver, Daniel H. Hastings, William A. Stone, Samuel W. Pennypacker, and John S. Fisher.

In the long list of deceased members of the Pennsylvania bar who attained national reputation, the following may be mentioned: Andrew Hamilton, Francis Hopkinson, Joseph Hopkinson, Jared Ingersoll, Joseph Reed Ingersoll, Charles Jared Ingersoll, Alexander James Dallas, George Mifflin Dallas, Ellis Lewis, Richard Peters, Henry Marie Brackenridge, William Rawle, William Rawle, Jr., William Henry Rawle, William Brooke Rawle, Francis Rawle, Jacob Rush, Richard Rush, Benjamin Rush, John Cadwalader, Samuel Bayard, Gouverneur Morris, John A. Bingham, John M. Read, John K. Kane, David Paul Brown, William Darragh Kelley, Frederick C. Brewster, Simon Sterne, Edwin M. Stanton, Francis Whar-

ton, Joseph McKenna, Cyrus L. Pershing, Richard Vaux, Robert Welsh, Charlton Thomas Lewis, Robert McClelland, John H. Mitchell, Franklin B. Gowen, Terrence Vincent Powderly, Walter George Smith, David T. Watson, James A. Stranahan, John G. Johnson, James Scarlett, James H. Reed, Gustav A. Endlich, Simon Peter Wolverton, Lyman D. Gilbert, Charles E. Bergner, and George S. Graham.

Miss M. Vashti Burr, of Cambria County, is the first woman appointed to a legal position in Attorney General's office, Pennsylvania Department of Justice, and is the youngest woman ever to be admitted to practice before the United States Supreme Court; only two other members of her sex holding that honor at the time of her admission. Miss S. M. R. O'Hara, of Wilkes-Barre, is the first member of her sex to be appointed a Deputy Attorney General of Pennsylvania, February 7, 1927.

The bar of Delaware County met on August 20, 1932, to honor George E. Darlington, who on that day attained the one hundredth anniversary of his birth, and had been an active member of its bar for more than seventy-six years. Mr. Darlington presented a petition asking that a rule for an interpleader be made absolute. The bench was graced by President Judge W. Roger Fronefield, and Judges John M. Bromall, J. B. Hannum, and Albert Dutton McDade, of the County Court, Judge O. B. Dickinson, of the Orphans' Court, and Justice Owen J. Roberts, of the Supreme Court of the United States, and by the presence of nearly every member of the bar of Delaware County. Mr. Darlington, who studied law under his distinguished father, Edward Darlington, was admitted as an attorney of the Delaware County Court, June 16, 1856, and at the date of this anniversary occasion he was the oldest practicing attorney in the United States (and also the oldest living Past Master in the Masonic Fraternity). Mr. Darlington retained his faculties until the last and was ill only a brief time before his death, which occurred within a year of reaching his centenary.

CHAPTER XII.

LITERATURE IN PENNSYLVANIA.

Three years after the coming of the Quakers, in 1682, William Bradford, the first printer, appeared in Philadelphia. In 1685 he published the first almanac in the New World, and printed the first book in Pennsylvania, written by Thomas Budd, and titled "Good Order Established in Pennsylvania and New Jersey." It was a small work descriptive of the people and the region, and was one of the important sources of our early history. In 1687 Bradford brought out the earliest American edition of "Magna Charta," with a preface by William Penn. The first book of verse, written by Richard Freame, and published in 1692, was a "Short Description of Pennsylvania," and its information was presented in doggerel verse. John Holme wrote a poem, which was published in 1696. Francis Daniel Pastorius, founder of Germantown, was the author of many volumes, most of which remained in manuscript; he also wrote our earliest American school book, a primer, printed in 1701. The dissensions among the Quakers brought about by George Keith, in 1692, led to many controversial pamphlets during the next ten years.

The first newspaper in the Middle Colonies was the "American Weekly Mercury," of Philadelphia, established by Andrew Bradford, December 22, 1719, and the paper for this and earlier enterprises was made by William Rittenhouse, on the banks of the Wissahickon, in the first paper mill in America, built in 1690.

The first German newspaper published in 1732, and the first newspaper and book printed from German type, were Pennsylvania enterprises, and Christopher Sower, the printer, cast his own type in his Germantown shop, the earliest such venture in the English Colonies. His printing establishment is still conducted by his descendants in the city of Philadelphia.

The Bible was first printed in both English and German in Pennsylvania, and here were also the first Bible Society and the first religious newspaper, and here Shakespeare's works were first printed on this continent in 1796.

"The American Monthly Magazine," the first in America, was established in Philadelphia in 1741, and today the "Saturday Evening Post" is the oldest and largest in the world. The first daily newspaper was the "Pennsylvania Packet and Daily Advertiser," established in 1785. Louis A. Godey gave us the first successful ladies' magazine, and the "Ladies' Home Journal" of today is indispensable wherever the English language is read. The Lippincott Company remains among the oldest and best publishing houses in the United States.

William Penn himself brought to Pennsylvania a literary influence. We need no better evidence of his ability in the literary field than his "No Cross, No Crown." The first school book was written by Francis Daniel Pastorius; Christo-

pher Dock, the old Philadelphia schoolmaster, wrote the first book on school theory in America. Lindley Murray, born near Harrisburg, wrote a grammar which was used in all English and American schools, and his name became a household word in every country where the English language was spoken.

It was said of the many-sided James Logan, Provincial officer for so many years, that his literary attainments during any period in the history of the United States would have been among the most prominent. He was one of the best classical and oriental scholars who ever lived in this country.

The first literary society, known as the "Junto," was organized by Benjamin Franklin and his cultured associates in 1728.

Robert Proud wrote an excellent early history of Pennsylvania before the Revolution; David Ramsey, of Lancaster, wrote the first history of the American Revolution; Bernard Hubley, of Northumberland, wrote one of the best histories of that period; John Bach McMaster, professor of history in the University of Pennsylvania for the last fifty years of his life, wrote the best history of the United States that ever has been written. The first American novelist was Charles Brockden Brown; Lloyd Mifflin, of Columbia, who wrote sonnets about the beautiful Susquehanna region, has been likened by English critics to Shakespeare, and was, perhaps, the most regarded of recent American poets; Margaret Junkin Preston, native of Milton, was the poetess laureate of the South; Francis Hopkinson was the first American song writer; Stephen Collins Foster, of Pittsburgh, was the creator of the American folk songs; George H. Boker was the greatest of American dramatists; Horace Howard Furness was the most eminent Shakespearean scholar; Deborah Logan was the first American woman historian; and John Dickinson the most famous pamphleteer. Pennypacker, in his "Pennsylvania, The Keystone," says "the people of Germantown were the most literary of the settlers, no less than eleven of them having each written ten books."

Early Almanacs—Jacob Taylor, in 1702; Titan Leeds, in 1716; John Jermain, in 1721; I. Hughes, in 1726; W. Bickett, in 1729; Thomas Godfrey, in 1731, and Benjamin Franklin, in 1733, began the publication of a series of almanacs. The almanacs were all pretty much alike in construction, being little books containing the days of the week, the months, eclipses of the sun and moon, the main roads and fairs, short dissertations and pithy sayings, the later ones imitating those which went before. They became more important and larger in size when Christopher Sower, of Germantown, in 1738, began to add illustrations.

Eminent Foreigners—Closely following the period of the Revolution Philadelphia attracted to her portals those of culture who for any reason came across the Atlantic. This city had long been known, and for many years was to continue to be known as the "Athens of America." Many of the most eminent of the foreign authors came here to live.

Dr. Joseph Priestley, when driven out of England by intolerance, was among them. Talleyrand, Beauvias, Vicounte de Noailles, Volney, the Duc de Liancourt,

Moreau, and later Murat and Joseph Bonaparte were among the French residents. Even Voltaire said that only seasickness prevented him from going to the same city. Thomas Moore, the Irish genius, lived on the banks of the Schuylkill; Alexander Wilson, the poet and ornithologist, and many others found congenial refuge in Penn's City of Brotherly Love.

Peter Stephen DuPonceau, a native of France, who came to Philadelphia with Baron Steuben, during the Revolution, was the most variously gifted man perhaps who has ever lived in Philadelphia. He wrote many essays on law and science, but devoted himself more to literature than any other activity. In 1835, at the age of seventy-five years, the French Institute awarded him a prize for a disquisition on the Indian languages of North America. He died in Philadelphia, April 2, 1844, aged eighty-four years.

New England Authors—It is interesting and important to know that many of the New England authors received their training in Philadelphia. Longfellow, Holmes, Lydia H. Sigourney, Frances Osgood, and Harriet Beecher Stowe were contributors of "Godey's Lady Book," established in 1830. Edgar Allen Poe lived in Philadelphia and edited "Graham's Magazine," and here wrote some of his poems and stories, including "The Raven" and "The Goldbug." John G. Whittier and James Russell Lowell were both residents of Philadelphia, the former as editor of the "Pennsylvania Freeman," and the latter as an assistant to Graham.

Satirists—A bright satire of great literary merit and of unknown authorship, called "The Chronicles of Nathan Ben Saddi," which dealt harshly with Isaac Norris, Franklin, Hughes, Wayne and others, was published in Philadelphia in 1757. Robert Waln, Jr., a gentleman of leisure and of literary tastes, born in Philadelphia, wrote mostly in satire, and some verse. He died in 1824. David James Dove, the Philadelphia schoolmaster, and Isaac Hunt, father of the famous English poet, Leigh Hunt, whose mother was a Pennsylvania woman, wrote a number of caustic pamphlets in the period just after the French and Indian War.

Historians—James Ralph, born in Philadelphia, in 1700, attained a higher position in English literature than any other American prior to the Revolutionary period. He and Franklin were inseparable companions, and went to London together in 1724. Smollett, in his history of England, telling of men of genius of the time, includes Ralph, calling him "the circumstantial Ralph." Thackeray, in the "Paris Sketch Book," devotes to him a page. Ralph's most important work was "The History of England During the Reigns of King William, Queen Anne, and King George I," in two folio volumes. Hallam called him "the most diligent historian we possess for the time of Charles II." The "Historical Review of Pennsylvania," published in London in 1759, has always been credited to Franklin, who wrote at the time that "this volume was not written by me nor any part of it." It

was written by Ralph. Ralph died January 24, 1762, and in recognition of his services George III gave a pension of £150 a year to his daughter.

The first history of Pennsylvania, in two volumes, by Robert Proud, the Quaker schoolmaster, appeared in 1797. David Ramsey, born in Lancaster County, April 2, 1748, a delegate in the Continental Congress, a prisoner of war, and later President of the South Carolina Senate, published a "History of the American Revolution" in 1789. It passed through many editions, and was translated into many languages. His other works were numerous. He died May 8, 1815. James Peller Malcolm, a native of Philadelphia, removed to London, where he became an author. Alexander Graydon, born in Bristol, Pennsylvania, April 10, 1752, was the author of some of the most delightful and important books of the Revolutionary period. His best work was "Memoirs of a Life Chiefly Passed in Pennsylvania within the Last Sixty Years." It was published in Harrisburg in 1811. He also wrote some poetry of merit.

Thomas Clark, native of Pennsylvania, published, in 1813-14, "Sketches of the Naval History of the United States," which was the foundation on which J. Fenimore Cooper wrote his "Naval History." Dr. Hugh Williamson, born in West Nottingham, Pennsylvania, was a statesman and man of letters. He also wrote a "History of North Carolina" in 1812, and other historical works. He died May 22, 1819. John Romeyn Brodhead, native of Philadelphia, wrote many important works of history, the principal one of which was his "History of the State of New York," published in 1844. Charles J. Ingersoll wrote much, and his "Historical Sketch of the Second War Between the United States of America and Great Britain," in four volumes, was published between 1845 and 1852.

Henry C. Lea, born in Philadelphia, September 19, 1825, wrote "Studies of the Period of the Reformation," which gave him a world-wide and permanent fame. He wrote many important works, also many papers on chemistry and conchology. Charles J. Peterson, native of Philadelphia, proprietor of "Peterson's Magazine," wrote many works on military subjects, including "Military Heroes of the Revolution," in 1842; "Military Heroes of the War of 1812, and the War With Mexico," in 1848; "Naval History of the United States," in 1850, and numerous other similar works.

John Fanning Watson, of Philadelphia, the celebrated annalist, historian, and antiquarian, aside from his regular publications, wrote the "Annals of Philadelphia," in 1830, and three years later "Historic Tales of the Olden Time," and many other of the most important historical works of this and other States. He died December 23, 1860. Reverend John Blair Linn, born in Shippensburg, Pennsylvania, wrote drama and poetry. John Blair Linn, a relative, born in Lewisburg, Pennsylvania, October 15, 1831, wrote "Annals of Buffalo Valley," the second series of the "Pennsylvania Archives," and histories of several counties of Pennsylvania.

Henry Reed, born in Philadelphia, July 11, 1808, grandson of General Joseph Reed, former President of Pennsylvania, spent half of his life in the literary duties of the University of Pennsylvania as Professor of Literature. He was one of the most accomplished scholars in English literature that this country has produced. Professor Reed published many books, chiefly on history. In 1845 he published a "Dictionary of the English Language." He lost his life in the "Arctic" disaster, September 27, 1854. Henry Clay Watson, born in 1831, was a journalist of renown, but also was the author of several volumes of hunting adventure, beside which his publications include "Camp Fires of the Revolution," in 1851; "Old Bell of Independence," in 1852; "Lives of the Presidents of the United States," "History of the United States," in 1853; "Heroic Women of History," in 1853, and many others. He died July 10, 1869.

Winthrop Sargent, born in Philadelphia, September 23, 1825, published, in 1855, "History of an Expedition Against Fort Du Quesne"; "The Loyalists in the Revolution," in 1857; "The Life and Career of Major John André," in 1861, and other works of a similar character. He died May 18, 1870. John Bach McMaster, professor of American History in the University of Pennsylvania, wrote many historical works. His "Brief History of the United States," in 1903, is a comprehensive study of America from the adoption of the Constitution, in 1789, to the outbreak of the Civil War. This history has been compared with the work of Macaulay.

Also these historians, who have honored their native Pennsylvania: William H. H. Davis, Neville B. Craig, Ebenezer Hazard, J. F. Meginniss, William Henry Egle, Charles Penrose Keith, Howard M. Jenkins, Samuel W. Pennypacker, Hampton L. Carson, Sidney George Fisher, Julius F. Sachse, Albert S. Bolles, Dr. Henry W. Temple, Albert Bushnell Hart, Isaac Pennypacker, George P. Donehoo, Frank C. Harper, C. Hale Sipe, Henry W. Shoemaker, Albert Cook Myers, and Henry S. Borneman.

Samuel Austin Allibone, born in Philadelphia, April 17, 1816. Book editor "American Sunday School Union," 1867-73; librarian Lenox Library, New York City, 1879 till his death in Switzerland, September 2, 1889. He is best known by his "Critical Dictionary of English Literature and British and American Authors," three volumes, 1854-71. He published other important works.

Henry George, born in Philadelphia, September 2, 1839. Political economist and editor, 1867; published "Our Land and Land Policy," in 1871, in which he advocated the single tax theory, later developed more fully in "Progress and Poverty," 1879. George expanded his theory in Europe, 1880-81; twice nominated for mayor of New York. He died October 29, 1897.

Dramatists—Thomas Godfrey, Jr., of Philadelphia, was the first American to write a play which was successfully produced on an American stage. His "The

Prince of Parthia" was first produced April 24, 1767, and was a play of merit as well as the first American play.

Mordecai M. Noah, the eminent Jew publisher, was born in Philadelphia, July 19, 1785. He wrote on many subjects, but none better than drama. He produced many successful plays. Joseph Hutton published, in 1812, some poetical works, but he is best remembered for his successful plays. He was for a time an actor. James Nelson Barker, native of Philadelphia, wrote no less than nine plays from 1807 to 1817, including comedy, tragedy, and an operatic play, which were produced on the stage. He also wrote some poetry. James Fennell, a talented English tragedian, who lived the latter part of his life in Philadelphia, was the author of several successful plays. He died in Philadelphia in June, 1861. Richard Penn Smith, native of Philadelphia, and grandson of Dr. Smith, first prebost of the University of Pennsylvania, wrote some successful stories, was more distinguished for his dramatic works, some of which were also acted in London theatres. George Henry Boker, in 1847, published a book of poems, "The Lesson of Life," and the next year appeared "Calaynos," a tragedy, which was remarkably successful both in American and English theatres; then followed other plays, including "Anne Boleyn," "The Betrothal," "Francesca da Rimini," and others. He also published two other volumes of poems.

The foremost authority on the history of the early American Stage is Professor Hobson Quinn, of the faculty of the University of Pennsylvania.

Poets—Samuel Keimer, who established one of the earliest newspapers, "Pennsylvania Gazette," had talent as a poet, and it is said, in 1740, composed as he set the type an elegy in verse upon Aquila Rose. This verse of Keimer's and the collections of hymns of the Dunkers, between 1730 and 1739, may be given as the beginning of Pennsylvania verse. These Dunkers at Ephrata started a press in 1745, and four years later published the Martyr Book, the most important literary production of Colonial America.

Francis Hopkinson, a signer of the Declaration of Independence, at the time of the Revolution wrote sprightly verse from which even Campbell copied, including the "Battle of the Kegs," a lively description of an effort by the use of floating casks of gunpower to destroy the British fleet in the Delaware; it appeared January 5, 1778. Leigh Hunt, the celebrated English poet, was the son of Isaac Hunt, who lived and wrote in Philadelphia, and of Mary Shewell, a Quakeress of the same city. Elizabeth Graeme Ferguson was generally regarded as the most gifted and accomplished woman of Philadelphia during the Provincial times and for sometime after the Revolution. Her poems were popular, but she attained even more success as a prose writer. Peter Markoe, of Philadelphia, published a volume of poems in 1787, and others afterwards. He died in 1792.

Timothy Shay Arthur was one of the busiest literary men that Philadelphia has produced. Among his voluminous writings are "Ten Nights in a Bar Room,"

"Lights and Shadows of Real Life," "Tales for Rich and Poor," etc.; and with W. H. Carpenter, he published also a series of histories of several States of the Union. William Clifton, Jr., born in Philadelphia, in 1772, published many poems of considerable merit.

Charles West Thomson, born in Philadelphia, in 1798, wrote many poems and some prose sketches; he was a contributor to the best periodicals of that time. Dr. Robert H. Rose, of Silver Lake, Susquehanna County, wrote "Sketches in Verse," in 1810, which contained some odes which provoked retaliation in the production of others. Thomas Buchanan Read, born in Chester County, both artist and poet, was the author of "Sheridan's Ride," and other poems more meritorious, among them "The Wagoner of the Alleghenies."

Lloyd Mifflin, born at Columbia, Pennsylvania, was a painter, sculptor, sonneteer, and poet. His sonnets about the beautiful region of the Susquehanna have been likened by English critics to Shakespeare, and he was perhaps the most regarded of recent American poets. George P. Norris, native of Philadelphia, was a successful journalist, who also produced several meritorious operas, his "Maid of Saxony" being well received. His rank is highest, however, as a typical poet, in which he had no superior in this country. All who read poetry at all are familiar with "The Carrier Dove"; "Woodman, Spare that Tree"; "Long Time Ago"; "Briarcliff," and many others of the like. Homer Greene, born in Ariel, Pennsylvania, January 10, 1853, contributed much verse and prose to magazines; his "The Blind Brother"; "Burnham Breaker"; "Coal and Coal Mines," and "The Riverpark Rebellion," are among his best publications.

Among other Pennsylvanians who have attained distinction as poets are the following: Henry Van Dyke, Robert Taylor Conrad, Langdon E. Mitchell, Robert Burns Wilson, and Lee W. Dodd.

Biographers—John Sanderson, born in Carlisle, in 1783, was the author in 1820, of "The Lives of the Signers of the Declaration of Independence," which was the original attempt to combine their biographies. He also published other works of importance. He died in 1844. Robert Shelton Mackenzie, born June 22, 1809, published "Life of Charles Dickens," in 1870; "Life of Sir Walter Scott," in 1871; "Memoirs of Robert Houdin," and numerous other works. He died in Philadelphia, November 30, 1880. Stephen Simpson, of Philadelphia, was the author, in 1832, of a "Biography of Stephen Girard," and other lesser works. Horace Howard Furness, native of Philadelphia, wrote the "Variorum Shakespeare," which is generally regarded as the most thorough study of the English dramatist.

Any list of Pennsylvania biographers would be incomplete without the mention of Alba Burton Konkle and Albert Cook Myers.

Lecturers—Pennsylvania has been the native place of many who have earned acclaim upon the lecture platform, and, perhaps, these are best represented

by Robert James Burdette, the humorist; Reverend Russell H. Conwell, and John Bartholomew Gough, the most popular temperance platform orator in America and England, nearly a century ago.

Biblical—Reverend Dr. Samuel Hulbeart Turner, native of Philadelphia, was a voluminous writer on Biblical subjects, and his works were highly esteemed; they were published between 1824 and 1861. He died in 1861.

Pamphleteers—John Dickinson was the most distinguished writer of political pamphlets, the most famous of which were written during the period of the Stamp Act, and were known as "The Farmer's Letters." Joseph Galloway has been referred to as the only one able to compete with John Dickinson. His publications consist of pamphlets, speeches, and works relating to the Revolutionary War, during which he was a Loyalist. Dr. William Smith, provost of the University of Pennsylvania, was another who was engaged in the political controversies of that period, and whose published works, on religious, historical, and philosophical subjects, include many political pamphlets. Philip Freneau wrote and published some of his most important works while a resident of Philadelphia, both in prose and verse. Tench Coxe, Attorney General of Pennsylvania, wrote at this same period chiefly on subjects of political economy, but many other published pamphlets were on public questions and of much importance. William Duane, of Philadelphia, wrote many pamphlets, and those on military subjects, published during the period of the War of 1812, were the best of the time.

Joseph Clay Neal, born February 3, 1807, was a humorist. He wrote "The City Worthies"; "Charcoal Sketches," in 1837; "Peter Ploddy, and Other Oddities," in 1844, and others. He died July 18, 1847.

Charles G. Leland, born in Philadelphia, August 15, 1824, was one of the most gifted among the literary men of Pennsylvania, and began his literary career while a student in Princeton, writing for the *Knickerbocker* and other magazines. He wrote "The Poetry and Mystery of Dreams," in 1856, "Pictures of Travel," "Legends of Birds," and numerous others. He also published a book of poems in 1872.

Pennsylvania political writers present a long and distinguished list. Included therein are the following: Anthony Benezet, Benjamin Franklin, Thomas Paine, Albert Gallatin, Henry D. Gilpin, James G. Blaine, Alexander K. McClure, Henry George, Elisha Mulford, James M. Beck, George Nox McCain, Mark Sullivan.

Authors—Charles Brockden Brown, native of Philadelphia, was the first American to make literature a profession. His novels were widely read and were reproduced in England. One of the most popular early American novelists was George Lippard, born in Chester County. He wrote "The Monk of Wissahickon," "Blanche of Brandywine," and other tales. Robert Montgomery Bird wrote "Nick of the Woods," a narrative of adventure among the Indians of Kentucky. He

also wrote successful plays, including three tragedies. He died in Philadelphia, June 22, 1854.

Bayard Taylor, born in Chester County, is probably the most famous man of letters from Pennsylvania. His "Story of Kennett" holds the highest rank among American novels. Dr. S. Weir Mitchell, born in Philadelphia, February 15, 1829,



Bayard Taylor

a celebrated physician, was also quite as successful a writer on medical topics and as a poet and novelist. His "Hugh Wynne" ranks high.

Richard Harding Davis, born in Philadelphia, April 18, 1864, was a novelist and litterateur, son of Rebecca B. H. Davis, a celebrated American novelist. He was also a distinguished war correspondent in Cuba (1898) and South Africa (1900). He died April 12, 1916. Frank Richards Stockton, born in Philadelphia, April 5, 1834, began his active life as a wood engraver, and invented a double graver, in 1866. He entered journalism in 1872, and was successful. His first successful novel was "Rudder Grange," in 1879; much of his best work is to be found in his short stories. His published works include many popular

titles. He died April 20, 1902. Owen Wister, native of Philadelphia, has attained unusual success and popularity with "The Virginian," "Lady Baltimore," and other novels.

A partial list of Pennsylvania authors, not before mentioned, includes the following: Thomas Godfrey, Jr., James Ralph, James Wilson, Dr. Benjamin Rush, Archibald Loudon, John J. Audubon, William Bartram, Alexander Wilson, Matthew Carey, Joseph Hopkinson, Henrie Marie Brackenridge, Judge H. H. Brackenridge, Henry C. Carey, Robert Baird, James Wilson Barker, James Hall, George



"Hazel Dell," Taylor's Boyhood Home, Near Kennett Square

Catlin, John Clark Hamilton, Richard Penn Smith, John Fanning Watson, Mordecai M. Noah, Robert Montgomery Bird, Joshua Francis Fisher, Theodore Henry Hittell, Henry Charles Lea, Robert James Walker, Isaac Leeser, Charles Godfrey Leland, George Lippard, Joshua B. Lippincott, George Pope Morris, John McClintock, Jacob Harris Patton, William Seymour Tyler, James P. Boyd, William Hardcastle Browne, John W. Forney, Henry Martyn Baird, Noah Knowles Davis, Robert James Burdette, Frank Cowan, William Hansell Fleming, Isaac James Good, Thomas A. Janvier, Henry Martyn Kieffer, Samuel Evans, John Porter Lamber-ton, James Russell Miller, John Henry Hobart, Charles Morris, Samuel D. McCon-nell, Alexander Thomas Ormond, Horace Porter, Eben Greenough Scott, Simon Adler Stern, James Moore Swank, Edward Newton, Henry Clay Trumbull, Stephen Benet, Francis Howard Williams, Stephen Crane, Edgar Fahs Smith, George Washington Williams, Annis Lee F. Wister, Cyrus Townsend Brady, Elisha Mulford, Robert Bridges, Benjamin Urban, William J. Holland, John L. Le Conte, Frederick T. Clark, Sidney George Fisher, William Henry Furness, Charles Homer Haskins, Edward Bok, William Rheem Lighton, Charles Leonard Moore, Maurice F. Egan, Harrison Smith Morris, E. Hershey Sneath, Robert Neilson Stephens, Thomas Dunn English, Edward A. U. Valentine, Francis Churchill Williams,

Rufus Rockwell Wilson, John Wurtz, Lewis E. Theiss, George Horace Lorimer, Horace B. Wallace, Amandus Johnson, Lee Wilson Dodd, Henry M. Paxson, Charles G. Deland, W. Elliott Griffis, Christopher Morley, Thomas A. Daly, Owen Wister, Reginald Wright Kauffman, Rev. John T. Faris, Mark Sullivan, Homer Greene, James Joseph Walsh, James Boyd, George Nox McCain, Rupert Sargent Holland, Henry Goddard Leach, George Gibbs, Horace Mather Lippincott, Herman L. Collins, Frederic Blair Jackel, Louis R. Pendleton, Thomas M. Lloyd, John Clarence Funk, Wilbur Morris Stine, Archibald Rutledge, Harry W. Frees, Mahlon Leonard Fisher, E. P. Oberholtzer, Joseph Hergesheimer, Joseph C. Lincoln, George Barton, Anthony J. Drexel Biddle, George Morgan, Edward Robbins, Walter C. Arensberg, Rev. Clarence E. N. Macartney, and J. Bennett Nolan.

Women Writers—Included in the long list of eminent Pennsylvania women who have become distinguished in literature may be found the names of the following: Deborah Logan, the first woman historian; Louisa M. Alcott, Rebecca Harding Davis, Eliza Leslie, Margaret Junkin Preston, Mary Baker Dodge, Elizabeth Howell, Sara Jane H. Higginson, Madeline Vinton Dahlgren, Julia Duhring, Mrs. Sara Jane Lippincott, Elizabeth Lloyd, Celia Logan Connelly, Mrs. William M. Darlington, Anne Hollingsworth Wharton, Jeannette R. H. Walworth, Kate Douglass Wiggin, Mrs. Louise Welles Murray, Mary Pulver, Anna Elizabeth Dickinson, Helen A. Clarke, Margaret W. Deland, Agnes Repplier, Helen Reimensnyder Martin, Olive R. Barton, Margaret Widdemer, Elizabeth Robins, Florence Earl Coates, Hilda Doolittle, Elizabeth Robins Pennell, Ida M. Tarbell, Elsie Singmaster, Mary Roberts Rhinehart, Katherine Mayo, Sarah H. Killikelly, Alice Louise Lee, Anna R. Burr, Marian Ames Taggart, Amelia Mott Gummere, Sara L. V. Oberholtzer, Armory Hare, Margaret Turnbull, Katherine H. Taylor, Amy Oakley, Grace Livingston Hill, Anna Pierpont Siviter, Linda A. Almond, Katherine M. C. Bregy, Norma B. Carson, Eugenie Mary Fryer, Helen S. Griffith, Helen W. Henderson, and Elsie Whitlock-Rose.

CHAPTER XIII.

ART.

Pennsylvania has had a pronounced influence upon art in America. This is the more remarkable when we consider the fact that the settlement of Pennsylvania was very largely due to the emigration of religious sects inclined to repression, and to shun all tendencies which would gratify the finer instincts. The art expression in Pennsylvania is unusual in many ways, and deserves more attention than it has heretofore received. From the fireside and the modest shop have come the most ornamental and artistic examples of textiles, furniture, metal, glass, and pottery. William Penn himself encouraged an artistic atmosphere when he planned that his great city should be beautiful, with simple architecture, trees, parks, and landscape gardening.

In almost every Quaker household in the early time a sampler hung in a frame against the wall of the parlor. It was expected that every girl should make one of them. These were produced with fine linen and colored woolen, and the letters of the alphabet, the numerals, names of the family, religious sentiments, verses from the Bible, trees, flowers, houses, animals, etc., were artistically produced. Almost every German family had what they called a "vorschrift," which had the same characteristics as the Quaker sampler, except that the work was done with pen and brush, and also with the use of water colors. The baptismal certificate, or "taufschein," regarded as essential, was cut into ornamental shapes and decorated with handpainted birds and flowers. The middle age art of illumination found its last expression in the manuscript of the Dunkers of Ephrata, and the Schwenkfelders, of Montgomery County, in which human figures and allegorical designs were often produced with great beauty.

The women spent much time over the production of coverlets, bed-spreads, and quilts, which were ornamented with involved and elaborate designs, and dyed with native dyes. These are now eagerly sought by the present generation, and the museums are in constant quest of specimens from the several sections of the Commonwealth. Quite as pretty and useful were the homespun linen towels, pillow cases, and table covers, many of which were often made more attractive by adding fringes and working into the design birds, animals, dates, names, and floral figures.

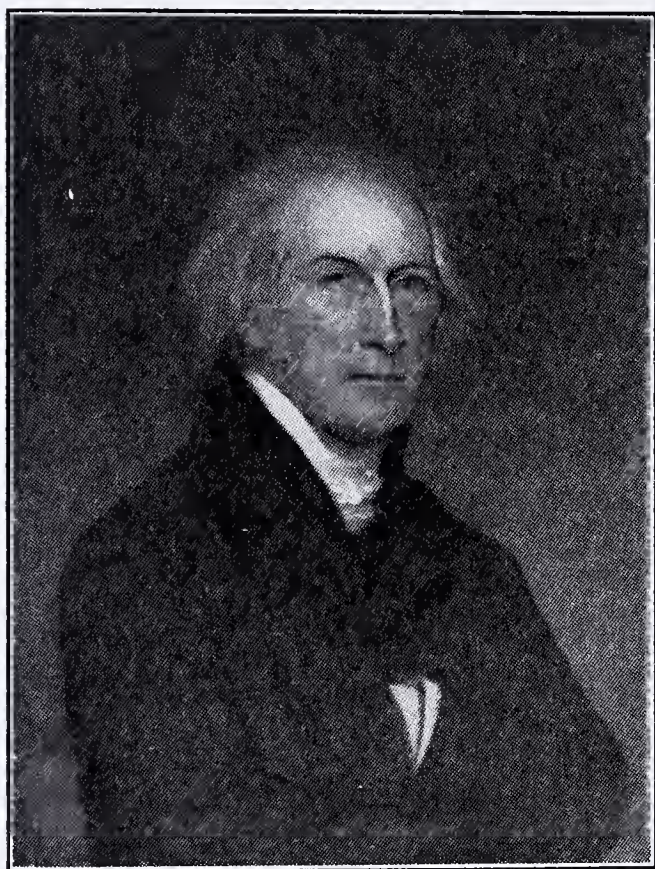
The artisans made their tools of iron and wood most pleasing to the eye. Many of these were carved or indented with appropriate designs or initials. Each stove plate was cast with figures and inscriptions often depicting some scene from the Bible literature, and always bore the name of the maker and the date of the casting. None of these are more attractive or valuable than the product of the early Pennsylvania founders. Every German settlement numbered among its people a potter, who embellished his pie plates, meat dishes, bowls, cups and saucers with

hunting scenes, domestic birds, and animals, and even historical scenes, and prominent personages. The tulip was the favorite flower of the German, and it so often appears on their pottery that Mr. E. A. Barber, in his book on the subject, gives this particular pottery the name of "Pennsylvania German Tulip Ware."

Glass utensils form one of the most valuable and interesting contributions to the early art of Pennsylvania, and the finest specimens in America were produced here. Notable were the productions of Baron William Henry Stiegel, at Manheim, Lancaster County. The early silversmiths were also among the most noteworthy in that craft.

Furniture making won unusual distinction, and the discriminating taste in design, together with excellent craftsmanship, have made specimens which rival any made in this country. This is particularly true of such furniture as was in Independence Hall, Christ Church, the Quaker meetinghouses, and in the elegant homes of that period.

Art can find congenial surroundings only in old communities where wealth permitted leisure and invited culture. It is not strange, therefore, that we hear so little of artists in the early history of America. The colonists did not present an inviting field to the painter or sculptor, but in New Hope is to be found today the greatest art colony in America.



George Clymer

The Pennsylvania Academy of Fine Arts is the oldest institution of the kind in the United States. As early as 1791 Charles Willson Peale attempted to found "a school for the fine arts," and it was his ambition to make Philadelphia the seat of art and science in America. His early efforts were unsuccessful, but sowed the seed which soon afterward bore fruit. In 1794 his first drawing school was succeeded by "The Columbianum," the first society in the United States for the promotion of the fine arts. The Academy of Fine Arts was organized in 1805, at a meeting in Independence Hall, by seventy-five gentlemen. In March, following, it was incorporated, with

George Clymer as its first president. The first exhibition was held in May, 1811. The original structure was destroyed by fire in 1845; a second building was erected in 1846 on a much larger scale, but the unusual growth of the academy demanded a larger building, and the corner stone of this third home was laid December 7, 1872; James L. Claghorn was then president; John Sartain, secretary, and Edward S. Clarke, treasurer. Philadelphia has also the School of Industrial Arts and the School of Design for Women, the first schools of their kind in America. The Car-

negie Museum, in Pittsburgh, where each year in the Department of Fine Arts is held the great international exhibition of paintings, is conceded to be the greatest such exhibition in America. Art has been made a requirement in the schools of Pennsylvania, and the program has attracted widespread attention because of its useful aims.

Painters—The earliest portrait to be painted in America was done in oil by Christopher Witt, of Germantown. It was the portrait of Johannes Kelpius, the "Hermit of the Wissahickon," who died in 1706. It represents Kelpius wrapped in his robes, seated in a chair. It has been reproduced in many ways. This earliest American portrait is now owned by the Historical Society of Pennsylvania. The earliest group picture was painted by a Swede, Gustavus Hesselius, a painter of portraits, who came to Philadelphia in 1711, and in 1720 painted the "Lord's Supper," for the parish of St. Barnabas, in Maryland. It is, so far as is known, the first painting of a group of figures, or of a scene in America.

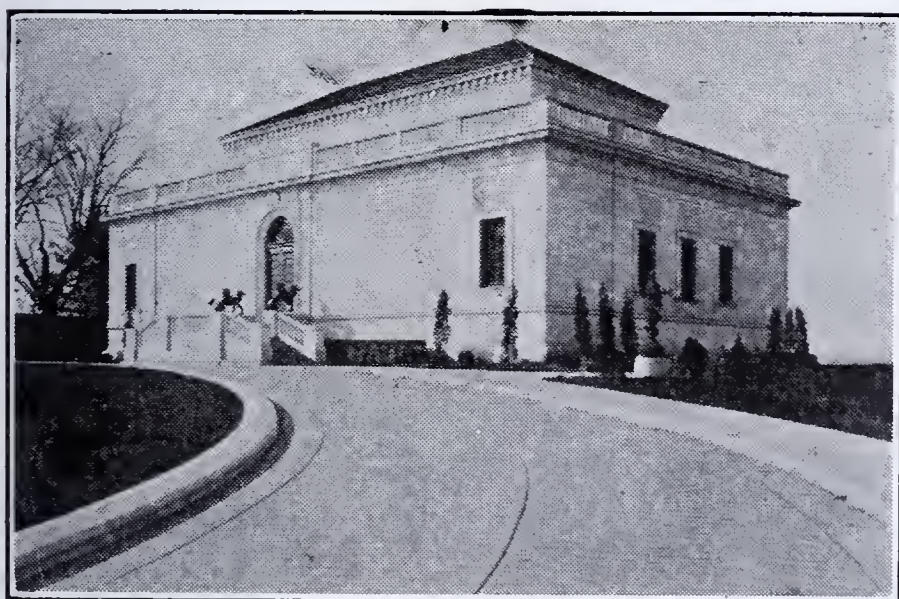
James Claypool, born in Philadelphia in 1720, was the first native American painter, and the teacher of Matthew Pratt, a nephew of Claypool, born in 1734, who became a painter of portraits, and acquired both fame and substance. John Meng, born in Germantown, February 6, 1734, was a gifted painter in oil. George Catlin



Benjamin West

was the foremost painter and writer of Indian life and customs in the world.

Art in America was born in Pennsylvania, when Benjamin West became the most interesting figure in American art, and its whole development must be traced back to this native of present Delaware County. All of the artists in the early time had their ambitions aroused by his example, and nearly all of them were trained in his studio. He



Deshong Art Museum, Chester

was adored at home and honored abroad, where he became the president of the Royal Academy of England, in 1792. Charles Willson Peale, native of Maryland, but long a resident of Philadelphia, and his distinguished sons,

Raphael, Rembrandt and Titian, the last two natives of Philadelphia, and other members of the family were successful artists. Rembrandt was one of the founders of the Philadelphia Academy of Fine Arts. One of his portraits of President Washington was purchased by Congress. Charles Willson Peale founded Peale's Museum, which was the foundation of the Academy of Fine Arts. His brother, James, was a distinguished artist, and painter of the portrait of Washington in Independence Hall. His son, James, was a successful marine and landscape painter, and his daughters, Anna Claypool Peale and Sarah M. Peale, painted miniatures and portraits of many prominent personages, including Lafayette, and several Presidents. All were Pennsylvanians.



**Drawing by George Catlin,
Showing Head-Flattening**



Catlin Painting the Indians

Native Pennsylvanians who have attained distinction in painting number many of the most celebrated artists, among whom the following should be listed: Jacob Eicholtz, Thomas Dougherty, Charles Robert Leslie, Samuel Jennings, George Catlin, Robert Henri, Francis M. Drexel, Charles Deas, Thomas Hicks, Newbold H. Trotter, Peter Frederick Rothermel, William Henry Furness, Samuel Sartain, William Sartain, William Trout Richards, Thomas Buchanan Read, Augustus G. Heaton, Thomas Eakins, Lloyd Mifflin, Henry S. Bisbing, Stephen Parrish, Edwin Austin Abbey, William B. Van Ingen, Lovell B. Harrison, Gabriel Harrison, Thomas A. Harrison, Daniel R. Knight, John Alexander White, Walter E. Schofield, William A. Coffin, Charles Morris Young, Charles M. Kurtz, William Henry Lippincott, Clyde Osmer Deland, Charles M. McIlhenny, Henry O. Turner, Percy Moran, Leon Moran, Albert Rosenthal, Charles Rosen, John Jean Adolphe, Adolph Borie, George William Sotter, Joseph T. Pearson, Jr., George B. Luks, John W. Little, N. C. Wyeth, Edward Warwick, Edward Willis Redfield, R. Sloan Bredin, William Langston Lathrop, George Harding, Horace T. Carpenter, Albert Detwiler, John Frost, H. L. Hoffman, John Rought, L. L. Kauffman, F. C. Landefeld, J. R. Connor, Benjamin Austrian, Fred Wagner, John

Fulton Folinsbee, Malcolm S. Parcell, Emily Sartain, Anna Lea Merritt, Mary Cassatt, Anna Claypool Peale, Sarah M. Peale, Katherine M. Cohen, Cecelia Beaux, Mary Rogers, Joanna Hailman, Mary Butler, Anna Margareta Archambault, Mrs. Mary Pemberton Ginther, Elsa Koenig Nitzsche, Catherine Norris Patterson, Charlotte Harding, Jennie A. Brownson, Katharine Patton, Laura Schneider, Ruth Anderson, Elizabeth Robb, Elizabeth Spalding, Marianna Sloan, Emily D. Taylor, Janet Wheeler, and Mrs. Clara G. Force.

The adopted Pennsylvanians, in addition to the Peales, already mentioned, include these distinguished artists: Thomas Sully, Joseph Wright, Pierre E. Du Simitier, John Neagle, Max Rosenthal, Thomas Birch, Gilbert Stuart, John Sartain, Charles Harding, James Hamilton, Paul Weber, Edward Moran, Thomas Moran, Peter Moran, Edward L. Henry, Thomas Hovenden, John Singer Sargent, Hugh Henry Brackenridge, Richard B. Farley, Everett L. Warner, Robert Spencer, William L. Lathrop, Norwood MacGilvary, Lazar Roditz, Newell Convers Wyeth, Daniel Garber, William Tefft Schwarz, Mrs. Fern I. Coppedge, Blanch Dillaye, Alice Kent Stoddard, Alice Seipp, and Violet Oakley, the most justly celebrated of our present-day artists.



George Catlin

Two of the greatest adopted Pennsylvania artists who became the leaders in their special field of endeavor were John James Audubon and Alexander Wilson, the greatest of American ornithologists and painters of bird life.

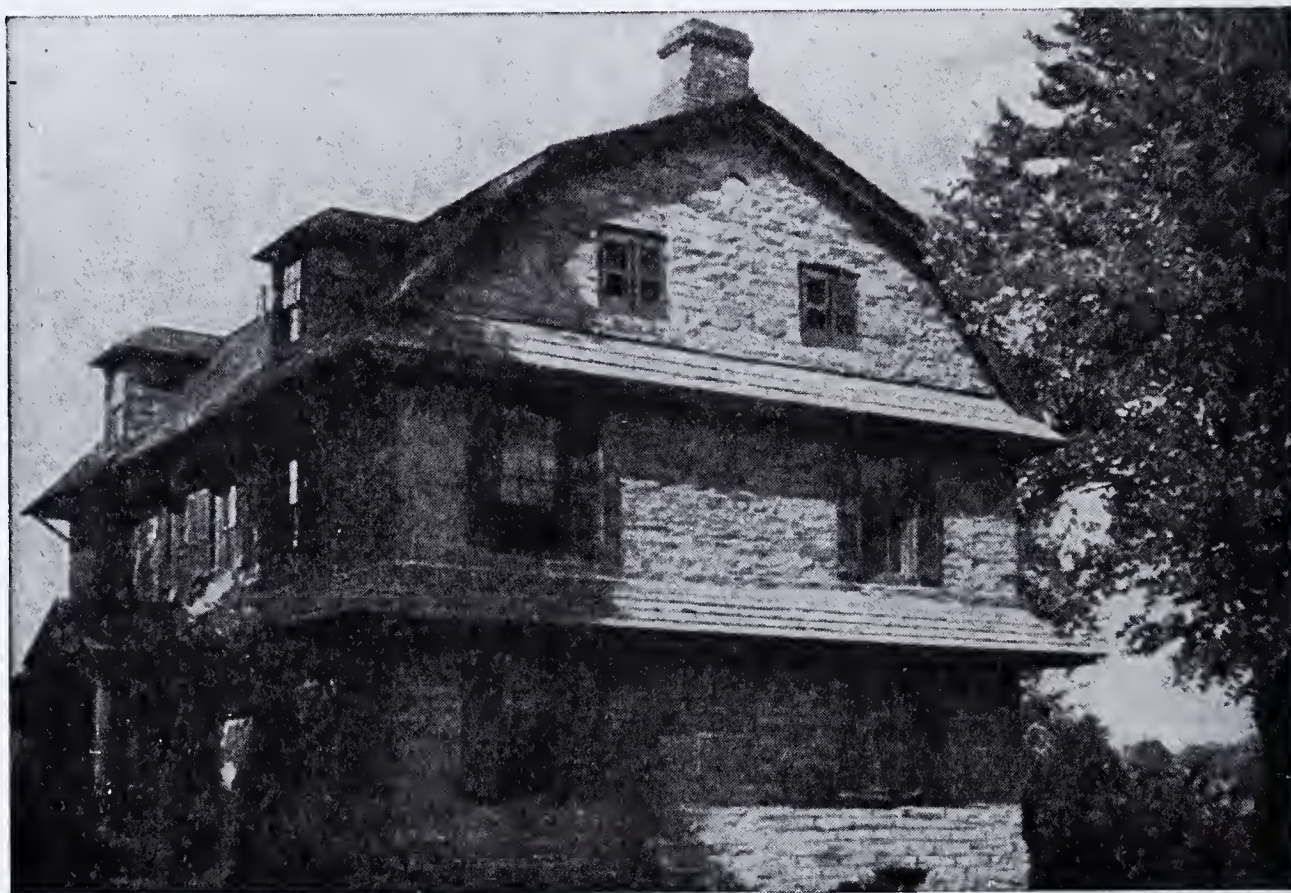
The long list of noted illustrators include the following native Pennsylvanians: Felix O. C. Darley, who has been considered the first American illustrator, Charles Stanley Reinhart, Arthur Burdett Frost, John White Alexander, William Wallace Denslow, William Thomas Smedley, Frank Cresson Schell, Joseph Pennell, Henry McCarter, John Sloan, Maxfield Parrish, Thornton Oakley, Jesse Wilcox Smith, Elizabeth Shippen Green Elliott, and the following adopted Pennsylvanians: Bass Otis, Albert Newsam, Howard Pyle, Alice Barber Stephens.

Benjamin Franklin has been credited with being the first American cartoonist, and Edwin W. Clay the first caricaturist. The adopted sons who have earned distinction as cartoonists include the late John L. DeMar, and Herbert Johnson, William F. Hanny, Charles Henry Sykes, and John Francis Hart.

Among the foremost designers of stained glass are: Mrs. Anna Lee Willet, Charles Jay Connick, George William Sotter, and Nicola D'Ascenzo, an adopted

son. The leader in tile designing was the late Henry C. Mercer. Samuel Yellin, an adopted son, and Morgan Colt lead in wrought iron craftsmanship. Noteworthy silversmiths include Cesar Chiselin and Philip Syng, Jr., the maker of the tray, ink pot, quill-holder, and sand-shaker used in signing the Declaration of Independence. Henry Pratt was a noted goldsmith. Jessie Gordon and E. P. Curtis gained an enviable reputation in pottery, and W. R. Mercer in specializing in garden pottery.

The "Pennsylvania Magazine," in 1775, the "Columbian Magazine," 1787, and the "Portfolio," 1801, show a great extension in the art of engraving. Perhaps



West's Birthplace—Swarthmore

the most famous of the early American engravers was David Edwin, who came to Philadelphia at the age of twenty, in 1796, and engraved in the course of his career two hundred and nine portraits.

Engraving upon metal and wood began in Pennsylvania at a very early date. When General Wolfe captured Quebec, 1759, Christopher Sower, in his Germantown shop, engraved a plan of the city and a portrait of Wolfe to illustrate the description of the event which he published in his famous almanac for 1761. This is one of the earliest attempts at portraiture and illustration. James Smithers engraved a portrait of John Dickinson in 1768, and one of Reverend Henry M. Muhlenberg in 1788. Another early engraver was John Steeper, in 1762, also Robert Aitken, the printer of the first English Bible in this country. Other celebrated engravers include the names of James Pompad, James Peller Malcolm, John Reich, James B. Longacre, Christian Gobrecht, Benjamin F. Reinhart, and William Thomas Smedley, all natives, and the adopted Pennsylvanians: David Edwin, Hezekiah

Wright Smith, Joseph Wright, Bass Otis, Benjamin Tanner, William Mason, David H. Mason, and John Barber are renowned as wood carvers.

In the field of sculpturing the list of native Pennsylvanians is equally long and distinguished. William Rush, the founder of the Pennsylvania Academy, was the first American sculptor. Other natives were: Howard Roberts, Lloyd Mifflin, George Grey Barnard, Alexander Sterling Calder, Albert Laessle, Samuel Murray, Beatrice Fenton, Blanche Nevin, and Katherine M. Cohen. Adopted Pennsylvanians include the names of Guiseppe Donato, Carl A. Heber, J. Otto Schweizer, Robert Tait McKenzie, and the late Charles Grafly, who was often called the Rodin of America.

CHAPTER XIV.

MUSIC IN PENNSYLVANIA.

The story of music in Pennsylvania is not only interesting but most important because it records an achievement not approached by any other State in the Union. This important contribution to American music is the more interesting because of the fact that William Penn brought to his Province the sturdy sects of religionists, who, at first, considered music worldly and place a ban on it. There was no music in the soul of the Quaker, and even in their worship they excluded the hymn of humility and the psalm of praise. In this they were even more peculiar than the Puritans. But the precentor was an important church officer in the Presbyterian worship; the manner in which he led the tunes was quite as important as the text and method of the sermon. Congregational singing was a duty and an observance among Presbyterians, but he abstained from the use of musical instruments himself, and did not permit such enjoyment to his family. Here then in Pennsylvania were two great influences against the cultivation of the art of music for purposes of enjoyment.

The Swedes, on the other hand, permitted music, and the Episcopal service included as a principal part the hymn, psalm, and anthem. The Baptists, German Reformed, and Lutherans used hymns. The Moravians even introduced organs and instruments, as did the Roman Catholics, and these two had choirs, weak at first, but developed as opportunity permitted. The Moravians inherited a love for music, and in striking contrast to other emigrants, made it the chief element in their religious and home life. They were the first sect to reproduce in America the highest class of music. They made Bethlehem a music center, and we are told in Maderia's "Annals of Music" that "The highest musical activity in this country existed in Bethlehem, the Episcopal seat of the Moravians."

Pennsylvanians may, therefore, be pardoned for their pride in the Commonwealth's contribution to the various musical activities in America. No other State can match the accomplishments of her musicians, or the initiatives with which she is justly credited.

The manufacture of musical instruments began in Pennsylvania, when, in 1741, Johan Klemm constructed the first American organ; two years later Gustave Hesselin began here the manufacture of spinets, which gave way to the piano, the first one of which was made in Philadelphia by John Behrent, who in 1775 advertised that he had "just finished an extraordinary instrument by the name of the piano-forte, made of mahogany, being of the nature of a harpsichord, with hammers and several changes." John Dffenbach, of Reading, made the first American pipe organ in 1776.

Benjamin Franklin, who was the leader in many learned scientific enterprises, was also devoted to music. It was he who first gave a concrete exposition of the science of vibration in his improvement of the musical glasses, which instrument he called the harmonica. We have no record of Franklin as a composer of music, but he was song-writer of merit, and played the guitar, harp, and flute. In 1741 he was the first in America to publish "Watts' Hymns."

A singstunde was organized in Bethlehem in 1742 with eighty voices, and two years later the first formal organization of vocalists and instrumentalists was formed, out of which organization arose the first orchestra in America. Trombones were first brought to the western shore in 1754 for the use of the Bethlehem Trombone Choir. This novel organization serenaded General Washington on his visit to Bethlehem in 1782. The use of this instrument is continued to the present day. By the year 1787 the Bethlehem orchestra included every instrument then known in Europe. In this town was sung the first oratorio in the New World, and here Bach's Mass in B Minor was heard for the first time, and Hayden's "Creation" and Mozart's symphonies were first rendered in America shortly after coming from the press. Since 1900 the celebrated Bach Choir, the most distinctive vocal organization in America, which has become a national institution, under the leadership of the late Dr. J. Fred Wolle, has annually conducted a festival of Bach music, which has done much to make the old Moravian town the musical center of the United States.

The first performance of a full oratorio took place at the University of Pennsylvania, April 9, 1801, when Handel's "Messiah" was rendered under the direction of Dr. Shaw. Several institutions were established prior to the close of the eighteenth century for the performance of concerts, the oldest of which was the Harmonic Society, of Philadelphia.

The fondness for music which exists among the Germans began to show itself when persons of that nativity organized the Mannerchor Music Society, December 15, 1835, the first such organization in the United States. The Germania Musical Society, also of Philadelphia, was an orchestral organization composed of professional musicians, all of them of great merit. They began a series of concerts on April 11, 1852, which became an annual festival.

The Scranton Mixed Chorus has won premier honors at all world fairs since 1876. Much of its success is due to the leadership of John T. Watkins. The Welsh of the Lackawanna and Wyoming valleys are everywhere renowned for the excellence of their musical accomplishments. Dr. Joseph Parry came to Danville from his native place in Wales when he was but a lad of ten years. He began to do light work in a rolling mill, but he soon developed musical talents of the highest order, and at the age of nineteen years he became a composer and competed successfully for prizes offered by the Eis-

teddvodan committee. Soon his remarkable talents attracted attention of the lovers of music on both sides of the Atlantic Ocean, and he was generously aided in procuring a year's instruction in the Royal Academy of Music in London; subsequently, by his own efforts, he was enabled to study there for two more years, when he finally won the highest record at the academy; Cambridge University conferred on him the degree of Bachelor of Music, and subsequently that of Doctor of Music. He then returned to Danville and taught in the local institute, 1871-74; in the latter year he accepted the professorship of music in the university at Aberystuith, Wales, where his compositions became more widely known, and in both hemispheres his reputation was established as one of the most eminent composers of the nineteenth century.

An interesting controversy once developed as to who was the first American grand opera composer, and it resulted in giving the honor to Benjamin Carr, Victor Pellister, or William Henry Fry. It is of great interest to Pennsylvanians to know that all three were Philadelphians, and that the final decision awarded to Fry the first honor with his opera "Leonora," which was also first produced in the Chestnut Street Theatre, June 4, 1845. Among other opera writers were the following Pennsylvanians: Alfred Arthur, Remington Fairlamb, John Clemens, Willard Spencer, Charles W. Cadman, Joseph Carl Breil, Arthur F. Nevin, whose opera "Poia" was the first American Grand Opera ever given in Europe. This production occurred at the Royal Opera House in Berlin, April 23, 1910.

Bernard Adam Grube, Moravian missionary to the Indians, and then pastor of the Moravian Church at Lititz, established the pioneer orchestra among the brethren of Lancaster County in 1765. David Tanneberger, the organ builder, came to Lititz this same year, and there conducted his organ building until his death in 1804. A musical organization was formed in Philadelphia as early as 1740, which produced the first concert work in the country. The first opera in America was produced in this same city, where also was first given Beethoven's "First Symphony," and where the first band in America was organized. The oldest band in the United States in continuous service is the Repasz Band, of Williamsport, organized by J. L. Mussina, in 1831.

The pioneer singing school was opened in Philadelphia by Andrew Adgate; the first musical academy or conservatory of music was established there; and the University of Pennsylvania was the first American college to establish a chair of music. Pennsylvania was the first State to have a State Supervisor of Music in the person of Paul E. Beck. Hollis Ellsworth Dann, native of Canton, was the director, 1921-25, and now occupies the chair of music at New York University. An outstanding authority in public school music in United States is Director Dr. Will Earhart, of Pittsburgh, who is also musical director of the School of Education of the University of Pittsburgh.

The very first attempts to compose national music were by Pennsylvanians. Francis Hopkinson, the signer of the Declaration of Independence, was the first composer, and his son, Joseph, composed "Hail Columbia," and the march played at the inauguration of President Washington. Thomas a'Becket, of Philadelphia, wrote the words and music of "Columbia the Gem of the Ocean"; Julia Ward Howe wrote the words of the "Battle Hymn of the Republic" to the tune that during the Civil War was known as "John Brown's Body." Pennsylvania now claims that this tune was written by one of her own sons, William Steffe. Father H. G. Ganns, of Milton, won a national prize with his march the "Banner of the Sea"; Joel B. Ettinger, also of Milton, composed the "McKinley Inaugural March," winning another national competition, and then with the Milton Band, of which he was director, he won a competition among the leading bands of the States of New Jersey, Delaware, and Pennsylvania; Hon. William H. Woodin, native of Berwick, Secretary of the Treasury, composed the "Franklin Delano Roosevelt Inaugural March," which was played by all the bands in the inaugural ceremonies March 4, 1933. Andrew Carnegie assisted in the purchase of 4,092 pipe organs in the United States; of this number 1,351 were placed in Pennsylvania. He provided for weekly organ recitals in Allegheny since 1889 and in Pittsburgh since 1895. Charles M. Schwab, munificent supporter of the Bethlehem Bach Choir and Lehigh Valley Orchestra, made his first money selling his own musical compositions.

Mrs. Marian Bigler Good, of Patton, in her excellent "Some Musical Backgrounds of Pennsylvania," says: "Surely it is a circumstance higher than mere coincidence that the makers of the sweetest American songs have been born and reared on the western slopes of our beloved Commonwealth—Foster, Nevin, Cadman. We thus acclaim these as the big three in the premier rank of America's greatest composers. Stephen Collins Foster, founder of American folk music; Ethelbert Nevin, creator of art song; Charles Wakefield Cadman, the prolific and versatile composer of Indian songs. The first of these, Stephen Collins Foster, gives Pennsylvania a unique place in the whole musical world, there is no other one composer anywhere of his distinct, unmatched, and at the same time universal calibre. He wrote for America her folk songs." H. T. Burleigh was a gifted singer and composer of Negro spirituals.

Possibly no other family has given so much to American music as the Nevin family. Ethelbert's son, Paul, gave settings to Princeton college songs, and wrote and directed comic opera; George B. Nevin, once mayor of Easton, and his talented wife and family have contributed much to enrich the music world. Himself a prolific composer of cantatas, church, and school music, and an instrumentalist and vocalist he earned an enviable musical reputation. His son, Gordon Balch Nevin, is a concert organist, composer and conductor; and his daughter, Shirley, is also a composer of great merit. Edwin H. Nevin, William Channing Nevin, and his two daughters, Mary Nevin and Alice Nevin, are all celebrated at home and abroad as singers and composers. Olive B. Nevin is a talented soprano, the daughter of a noted

tenor and musical critic, and her brothers, Ernest and Daniel E., are instrumentalists and composers of the first rank, the latter also a successful writer of comic opera.

Other Pennsylvanians who have made notable contributions in music include the following: Composers, William Wallace Gilchrist, Adolph Foerster, Frank Losey, Camille W. Zeckwer, Stanley Addicks, P. D. Aldrich, Clarence Bawden, Jean Berl, H. A. Clark, A. J. Dooner, W. M. Felton, Eleanore Everest Freer, Harvey Gaul, Adam Geible, Elizabeth Gest, P. H. Goepp, Frank Gray, Ralph Kinder, Richard Kuntz, H. A. Matthews, Rollo Maitland, Russel King Miller, Carlo Minetti, Francis McCollin, J. V. O'Brien, Leo Oehmler, William Oetting, P. W. Orem, Agnes Quinlan, Vincent Wheeler, T. Carl Whitmer, David D. Wood, Dr. Henry Gordon Thunder, and Dr. James Francis Cooke, who has been made a Chevalier of the Legion of Honor, of France.

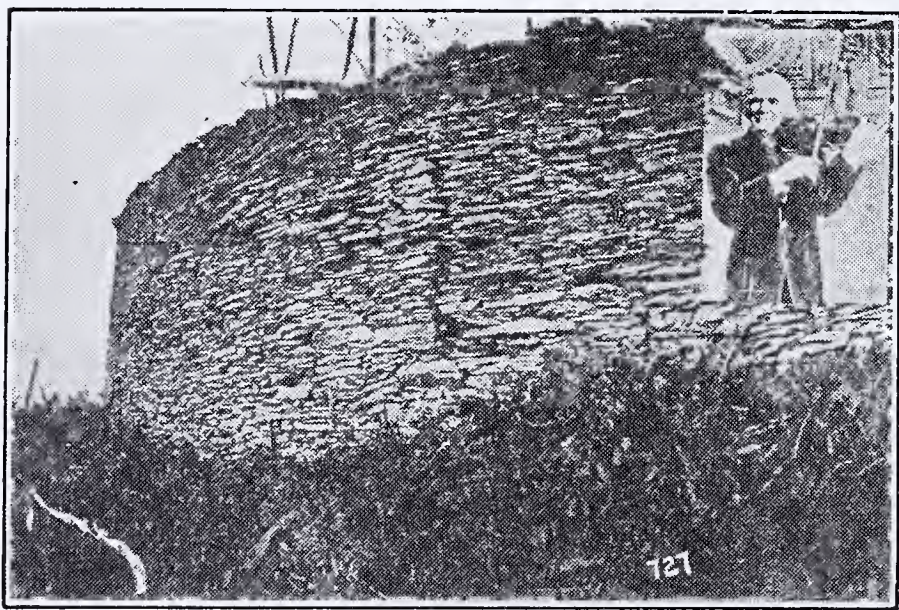
Among the most important early hymn writers in Pennsylvania were: Francis Daniel Pastorius, of Germantown; Johannes Kelpius, of the Wissahickon; Conrad Beissel, of Ephrata; and Count Nicholas Ludwig Zinzendorf, of Bethlehem. To Pastorius has been assigned the honor of being the first German hymn writer on American soil. Kelpius was the first practical musician. Not only was he the composer of hymns and primitive musical scores, but it is believed that he brought the first organ to Pennsylvania, as well as the viol, hautboy, trumpets, and kettle drums. Among Kelpius' "Hermits" were also these hymn writers: Heinrich Bernard Koster, Johann Gotfried Seelig, and David and Justus Falkner.

The first sacred music in America was written in goosequill manuscript by Pennsylvania Germans at the Ephrata Cloister. Choirs and singing schools were early started there under the direction of Beissel, who, according to one authority, was himself a good singer as well as an excellent performer on the violin and other musical instruments. Music for the choirs was written on sheets by the sisters. More than four hundred hymns of Beissel's composition were thus copied into the great Ephrata hymn book. There were more than one thousand original compositions belonging to the Cloister. Beissel wrote the first Treatise on Harmony in America. He also wrote an essay on music as a preface to the "Turtel Taube," at Ephrata, in 1747; in 1754 he published there an important musical work which formed the setting for verses of scripture from the German Bible. The Schwenkfelders made a worthy contribution to Pennsylvania-German music, chiefly through their hymns and their innate love of singing them on all occasions. Reverend George Weiss, their first minister, brought with him a collection of 1,559 hymns, which he and his father, Casper Weiss, had compiled. Other Moravians than Zinzendorf were hymnologists; Bishops Spangenberg and Heyl and Anna Nitschmann being the most prominent. The first collection of hymns was published in 1761 by Rev. James Lyon, of Philadelphia, America's first hymn writer. Among the best known Pennsylvania hymnologists are the following: Philip Paul Bliss, of Clearfield; James N. Black, of Williamsport; Rev. Robert Lowry, of Lewisburg;

J. Lincoln Hall, of Philadelphia; Rev. Elisha Hoffman, of Orwigsburg; James McGranahan, of Adamsville; W. A. Muhlenberg, of Reading; Ira D. Sankey, of Lawrence County; John R. Sweeney, of West Chester; Will R. Thompson; Dr. D. Brink Towner, of Rome, Pennsylvania. W. J. Kirkpatrick compiled more hymn books than any other American, and Frederic Mayer Bird, the noted hymnologist, collected the most complete and valuable musical library in the United States. The late Rev. Louis F. Benson, D. D., was the greatest authority on hymnody, and the editor of the hymns of the Presbyterian Church.

There is no State song of Pennsylvania, but several attempts have been made to have the General Assembly adopt one from the selections of Pennsylvania composers. Not a few songs have been written in the hope that each one would win such popular approval that by common consent and usage it might become recognized as the State song of Pennsylvania. Such attempts to meet these requirements have been made by E. Bram Lytle, Hamlin E. Coggsell, John E. Barrett, Will George Butler, J. W. Yoder, Thomas L. Gibson, E. M. Dilley, B. S. Dise, Henre Lattis, James D. Law, Emma K. Mayhew, Gertrude M. Rohrer, B. J. Tie-mon, George Wheeler, and others. Gertrude M. Rohrer composed the Pennsylvania song which was adopted by Pennsylvania Federation of Musical Clubs, which was played by the United States Marine Band at the inauguration of Franklin D. Roosevelt.

Pennsylvania has been the native place of many noted critics and writers of music. Notably in the list are: James Gibbons Huneker, Winton J. Baltzell, Rev.



Ole Bull—Part of His Castle Wall, Potter County

H. T. Henry, Theodore Presser, James Francis Cooke, James C. Beckel, Waldo Selden Pratt, J. P. Caskey, Raymond P. Walters, Fannie Raymond Ritter, and Sigmund Spaeth.

Ole Bull, the world famous Norwegian violinist, attempted to establish a settlement of his fellow countrymen in Pennsylvania in 1853, which was doomed to failure. Bull was compelled to abandon his project with the loss of his wealth, and again play in concert to recoup his lost fortune. Ole Bull was a musical genius, but building five cities in the wilds of Potter County was a different thing than playing Beethoven's "Eighth Sonata" on a violin; he could move audiences, but not mountains.

The Philadelphia Orchestra, established in 1900, has, under the leadership of Leopold Stokowski, become the finest organization of its kind in the world today, and Sergie Rachmaninoff, the Russian pianist, says he believes it to be the best the world has ever heard. Symphony orchestras are successfully maintained in Pitts-

burgh and many other cities and communities in Pennsylvania, the two smallest towns having such organizations being Danville and Milton.

The Philadelphia Harp Ensemble was one of the earliest harp ensembles and is one of the most unique collections in America. The Philadelphia Chamber String Simfonietta is a large string ensemble group of unusual merit. The Boys' Harmonica bands that have spread in such popularity throughout the country were originated and sponsored by Albert N. Hoxie, of Philadelphia, who so ably directs the Boys' Harmonica Band of that city, the finest organization of its kind anywhere. The Philadelphia Summer Concerts Association gives open air concerts each year through July and August, in a beautiful setting at Robin Hood Dell, which are possibly the finest ever given elsewhere.

In addition to independent bands, choirs, choral, and instrumental groups, there are in Pennsylvania more than 150 music clubs, the greater number of which being affiliated with the Pennsylvania Federation of Music Clubs. Notable in this group are the Philadelphia Matinee Club, the Philadelphia Music Club and the Pittsburgh Tuesday Musical Club, which are among the largest music clubs in the United States, each having about 2,000 members. Such clubs do much in fostering, presenting, and promoting good music throughout the Commonwealth.

The Metropolitan Opera Company, of New York, gives a regular season of opera each year in Philadelphia. There is also the Philadelphia Grand Opera Company, and the old Philadelphia Operatic Society, founded by Sigfried Berhens for the promotion of opera in English.

The Musical Fund Society, established in Philadelphia in 1820, had for its objects "the relief of decayed musicians, and the cultivation of the skill and diffusion of taste in music."

The Academy of Music changed the center of musical entertainments in the country. The corner stone of this imposing building was laid July 26, 1855, and its opening was on January 26, 1857. It has earned a distinguished and honorable tradition, and can summon more musical memories than any other place of assemblage in Pennsylvania. It is still the music center of the Commonwealth. It is the present home of the Philadelphia Orchestra.

Not the least in importance in music in Pennsylvania is the outstanding music magazine, "The Etude," published in Philadelphia. Founded by Theodore Presser, in 1883, it has become the largest and most important musical publication in the country. Mr. Presser was also founder of the National Music Teachers' Association, and the donor of the Presser Foundation, the endowment fund of which provides for the Home for Retired Music Teachers, and the relief of deserving musicians, scholarships, and grants for music buildings at colleges and universities.

In 1749 John Beals, the music master, "at his home on Front Street, near to Chestnut, teaches the violin, hautboy, German flute, common flute, and dulcimer, by note." There have been many distinguished musical educators in our Commonwealth. Benjamin Cross, the earliest and best known music teacher in America, in his time, was born in Philadelphia, September 15, 1786, and many of the initiatives

in music in that city can be traced to this foremost musician. "The oldest of the music schools of Philadelphia is The Philadelphia Musical Academy, established in 1870. Identified with this school are Camille W. Zechwer and F. E. Hahn. Gilbert Raynolds Combs established the Broad Street Conservatory. There are also the Sternberg and the Leefson-Hille schools, and Dr. Hugh A. Clark heads the musical school of the University of Pennsylvania. The Curtis Institute of Music in Philadelphia, founded and endowed by Mary Curtis Bok, giving scholarships to students of unusual talent and application, is certain to become one of the greatest institutions of the kind in the world. The Pittsburgh Musical Institute of Pittsburgh since 1915 has been under the direction of Charles M. Boyd, and Dr. Will Earhart, mentioned earlier, is director of music at the University of Pittsburgh. Other educators of national reputation include Sara Eddy, William Gustavus Fisher, Adolph Forester, Edmund J. Myer, Waldo Selden Pratt, J. Lawrence Erb, C. de Vaux Royer, Alphonse W. Schenuit."

In the number and character of distinguished artists Pennsylvania has been highly appraised. In the list of those who have attained national prominence are the following:

Organists—Adam Geibel, Frederick Maxson, Henry Gordon Thunder, Charles M. Boyd, Henry S. Fry, Harvey Gaul, Ralph Kinder, Russell King Miller, William H. Oetting, J. Frank Frysinger, Rollo Maitland, David Adams Warden, William Kossoth Steiner, Frederick Archer, Frank E. Ward, native of Bradford County; and Thomas Carl Whitmer, native of Altoona; Morris Lindsay Norden; Charles Heinroth, more than twenty years director of music of the Carnegie Institute of Pittsburgh, was first American musician appointed to this position.

Pianists—Mary Hallock Greenwalt, Madame Sturkow-Rider, Edward Morris, Ralph Leopold, Moritz Leefson, D. H. Ezerman, Louis Johns, Robert Braun.

Violinists—Jules Falk, Theddeus Rich, Arthur Hartman, Sascha Jacobinoff, Albert Vertchamp, Frank Gittleson, Martinus Van Gilder, Fred E. Hahn, John F. Rhodes, J. K. Witzeman, Charles Murphy.

Harpists—Mary Warfel, Dorothy Johnson Baseler, Francis Papitina, Josette Robertson, Marie Miller.

Tenors—Paul S. Althouse, Nicholas Douty, John Barnes Wells, Henry Gurney, Frederick Gunster, Bernard Poland, Paul Volkman, John Braun, William Miller.

Baritones—David Bispham, Henri Scott, Louis Kreidler, Ernest Gamble, Henry Miller, Horatio Connell, Frank Conley, Edwin Evans, Louis P. Howell.

Sopranos—Florence Hinkle, Olive Nevin, Sue Harvard, May Marshall Richter, Betsy Lane Shepherd, May Ebery Holz, Vivienne Segal, Mildred Faas, Bianca Soroya, Inez Barbour, Gertrude Renneyson, Duslina Giannini, Ethel Hayden, Suzanna Keener, Emily Stokes Hagar, Louise Margaret Nicholson, who became the prima donna at the Paris Opera in 1894.

Contraltos—Louise D. B. Homer, Kathryn Meisle, Christine Miller Clemson, Elsie Baker, Mary Jordan, Marie Stone Langston, Barbara Schaeffer, Marian Anderson, Mae Allison, Ruth Lloyd Kinney, and Florence Wickham.

CHAPTER XV.

DRAMA AND THE STAGE.

In the days when the Quaker influence in Pennsylvania predominated, the amusements of the young people were for many years those of the simplest and most innocent kind. Riding, swimming, and skating afforded pleasant outdoor sport. The Yearly Meeting in 1716 advised Friends "against going to or being in any way concerned in plays, games, lotteries, music, and dancing." In 1719 advice was given "that such be dealt with as run races, either on horseback or on foot, laying wagers, or use any gaming or needless and vain sport and pastimes, for our time passeth swiftly away, and our pleasure and delight ought to be in the law of the Lord."

Various early laws of the Province prohibited stage plays and amusements, not only bull-baiting, bear-baiting and cock-fighting, but such as were neither immoral nor cruel, as bowls, billiards, and quoits. Macaulay said of the Puritans that they opposed bear-baiting "not because it gave pain to the bear, but because it gave pleasure to the spectators." Quaker legislation as to games was, indeed, scarcely stricter than Henry VIII's, but Quakerism discountenanced excitement.

In 1723 a wandering showman arrived in Philadelphia and set up a stage just outside the jurisdiction of the city corporation. At the request of the Quaker members of the Assembly, Joseph Growden, the Speaker, asked Governor Keith to prohibit any performance, but he declined to do so, and only promised that good order should be maintained. The actor issued his playbills and gave what is believed to have been the first entertainment in Pennsylvania, in April, 1723. The actor who entertained by his "comical humour," in April, 1724, called himself the audience's "old friend Pickle Herring," so it is presumed he was the owner of both shows. In 1724 he introduced the "Roap-Dancing" as newly arrived. The rope walkers were a lad of seven and a woman; there was also a woman who would spin around rapidly for a quarter of an hour with seven or eight swords pointed at her eyes, mouth, and breast. Governor Keith himself attended one or more of these performances. In 1727 the "Lion, King of Beasts," was first exhibited.

The Quakers and rigid Presbyterians, who in the early days frowned down dancing and other "frivolous amusements," could not be expected to countenance the introduction of the drama. When Murray and Kean's company of Thespians made their appearance in 1749, they were not permitted to make a long stay in Philadelphia, but were ordered away as soon as the worthy rulers of the city's morals realized the fact that their entertainments possessed irresistible attractions. The company went to New York, and for five years the staid Philadelphians did not see a play.

In 1753 Lewis Hallam's English company, after traveling a year in the Southern Colonies, especially in Virginia and Maryland, went to New York, where they opened their theatre in September. Soon the report of their great success awakened a desire among the more liberal-minded Philadelphians that Hallam should visit the Quaker City. On April 15, 1754, they gave their first performance in the warehouse of William Plumstead, presenting the tragedy of "The Fair Penitent," followed by the farce "Miss In Her Teens." Mr. Rigby spoke a prologue and Mrs. Hallam an epilogue, both written for the occasion, in which, after defending the stage from the accusations of sinfulness, and alluding to the effect produced by the tragedy upon the audience, Mrs. Hallam asked:

If then the soul in Virtue's cause we move
Why should the friends of Virtue disapprove?

This temporary theatre was neatly fitted up and opened to a full house. The license was for twenty-four days but this number was extended to thirty, and closed June 24, after having enjoyed a brilliant and profitable season. One of the performances was given for the benefit of the charity school.

Hallam's company returned in 1759 to occupy a permanent theatre erected for them in Southwark. A larger theatre was built five years later, and in this the "American Company" produced the first play written by an American author performed on any regular stage, when on April 24, 1767, "The Prince of Parthia," written by Thomas Godfrey, Jr., of Philadelphia, was successfully given. This first American play was admirably revived several years ago by a company of college students. It belongs to the old-fashioned school of tragic drama, and is typical of the period when every young dramatist sought to imitate Shakespeare. "The Prince of Parthia" was a work of much merit, as well as the very first American play.

The American Company played at the Southwark Theatre for several seasons, but the theatre remained closed from the beginning of the Revolutionary War until it was opened by the British officers during their occupancy of Philadelphia in 1777-78. These amateur performances were given for the benefit of the widows and orphans of the soldiers. Among the actors and producers was the ill-fated Major John André. This theatre remained in use until it was destroyed by fire, May 9, 1823.

After the return of the Continental Congress to Philadelphia there was no revival of the plays, the Assembly of Pennsylvania even legislated against theatrical performances. In 1789 a petition signed by 1900 citizens asked for the repeal of this prohibition, which was met with one in opposition signed by more than a thousand of the religionists. The restrictive portion of the act was repealed, when Hallam and Henry opened the Southwark Theatre, January 6, 1790, with "The Rivals" and "The Critic." The season was brilliant, and the theatre in Philadelphia and elsewhere throughout Pennsylvania has since been popular.

The name of Durang was perpetuated in the annals of the stage in Pennsylvania for many years by two members of that family. John Durang played at the old Southwark, with three of his sons, Augustus F., Ferdinand, and Charles, and his daughters, Catherine and Charlotte. The father had played with the Hallam's company since 1785, and many years of his life as an actor were spent in the Southwark. When he and his talented family opened a long run at the old theatre in 1807, it was but natural that the place should prove to be popular for the lovers of the drama. Charles, the youngest son, was destined to perpetuate the name of Durang in the history of the stage long after his father had passed forever from the living stage. Charles was also a soldier, being one of the garrison which guarded the six-gun battery at the battle of North Point, Maryland, which was immortalized by Francis Scott Key's glorious song, "The Star Spangled Banner," and which was sung for the first time by Ferdinand Durang, in Baltimore, with his brother, Charles, leading the chorus. Charles left the stage only when the infirmities of old age compelled him to do so. He wrote a "History of the Philadelphia Stage," shortly before his death.

Professional rivalry, based principally upon circumstances arising from different nationality, produced feelings of such deep personal antagonism between Edwin Forrest, native of Philadelphia, confessedly the greatest of American tragedians, and William Charles Macready, the most powerful actor of England, which culminated in a tragedy of blood and death that engrossed the attention of America and Europe alike. Forrest had made a tour of English playhouses in 1844, where his rival, Macready, behaved badly toward him, and was inhospitable. When Macready returned to New York in September, 1848, Forrest was also playing "Macbeth" in the same city. Macready advertised to play the same tragedy for the opening of his engagement, and it was taken as a gage of defiance thrown by Macready, and on the opening night, May 7, 1849, there occurred a riot, which required the presence of militia to quell, and cost the lives of thirty-four and the wounding of nearly two hundred others. Macready escaped from the theatre by a rear exit, and after being secreted in a private house for two days, was driven in a carriage in disguise to Boston, whence he sailed for England. Edwin Forrest continued the idol of the American stage until the time of his death, December 12, 1872.

The Edwin Forrest Home for Retired Actors, in Philadelphia, was founded under the direction of the famous actor, who, by his will, dated April 5, 1866, directed that all his property, with the exception of annuities to his sisters, and some personal legacies, should be applied for the above purpose, and that it should be established at his country place called "Spring Brook," below Holmesburg.

Joseph Jefferson was a native of Philadelphia, and the third generation of actors of that name. His grandfather, Joseph Jefferson, was born in England, in 1774, came to America in 1796, located permanently in Harrisburg, in August, 1824, and lived there until his death, August 6, 1832. His son, Joseph, was born in Philadel-

phia, in 1804, and became a famous actor and the father of Joseph, born in Philadelphia, February 20, 1829. The third Joseph became one of the greatest of American actors, and will ever be remembered for his "Rip" in the successful drama "Rip van Winkle." He died April 23, 1905. John McCullough, a native of Ireland, but a resident of Philadelphia from the age of twelve, became the beloved tragedian, who was held in the highest affectionate regard of the people throughout a long and eventful career on the stage. He died in Philadelphia November 8, 1885.

John Drew, the great actor who remained so popular to the day of his death, July 9, 1927, was born in Philadelphia, November 13, 1853. His parents were great actors. The father, John Drew, and his no less celebrated wife, were natives of England, but had resided in Philadelphia all the period of their active stage careers. The elder John Drew died in Philadelphia, May 21, 1862; Mrs. John Drew died there August 31, 1897.

James Edward Murdock, the celebrated tragedian, was born in Philadelphia, June 25, 1811. He played the character of "Hamlet" for fifteen continuous years with the greatest success. He died May 19, 1893.

William Barrymore, the great English actor, and progenitor of the American Barrymores, first appeared in America at the Walnut Street Theatre, January 28, 1832. Ethel Barrymore Colt, the greatest of the present-day actresses, was born in Philadelphia, the daughter of the justly celebrated Maurice Barrymore, the actor and playwright, who died in 1905.

In the long list of famous actors who are natives of Pennsylvania are the following: Robert Taylor Conrad, Philadelphia; Henry Denman Thompson, Girard; Rose Eytinge, Philadelphia; Eleanor Mayo; Francis Wilson, Philadelphia; Belle Archer, Easton; Cecil Blount DeMille, Eleanore Boardman, Lawrence Eyre, Agnes Christie Johnston, George Kelly, Douglass MacLean, John Thomas McIntyre, Thomas Meighan, Langdon Elwyn Mitchell, Tom Mix, Vivienne Segal, Lois Weber, Rita Weiman, Ed Wynn, and the famous "Roxy," Samuel L. Rothafel.

It is an interesting fact in the history of amusements that from 1799 to 1871 nineteen theatres, circuses, and museums in Philadelphia alone were destroyed by fire and not a single life was lost among the audiences.

The oldest theatre in the United States is the old Walnut Street Theatre, opened in 1809.

The first attempt at the performance of a musical drama or opera was made by Hallam's company in the autumn of 1759; it was "Theodosius, or the Force of Love," with all the vocal and instrumental music.

At the outbreak of the Revolution Congress prohibited "theatrical entertainments as well as other vain diversions." Opera was produced in Philadelphia under great difficulties long after that struggle was ended, as the law still continued until its repeal in 1789. What might be denominated the first professional and amateur concert took place at Oeller's Hall, in Philadelphia, May 5, 1794. Benjamin Carr sang several songs. He was a brother of Sir John Carr, an Englishman of some literary education. Benjamin was a fine musician and a successful composer.

Negro Minstrelsy—Negro Minstrelsy began to attract attention about 1837. On August 1, 1853, Samuel S. Sanford opened the first Ethiopian permanent opera house. This place was destroyed by fire December 9, following. In 1855 Sanford opened his second venture, the Sanford Opera House. This became the famous Carncross and Dixey, which remained a popular minstrelsy to the present generation, more recently known as Dumont's Minstrels.

Circus—The first circus in the United States was born in Philadelphia, when John Bill Ricketts erected a riding school there in 1792. President George Washington wrote in his journal that he "put aside care and worry and went to Ricketts' Riding School to seek enjoyment and pleasure." Ricketts employed one McDonald "to perform the feats and antics of a clown"; also Signor and Madame Spinacuta, the former a tight-rope walker, the latter an equestrienne of no mean ability.

Hugh Lindsay, the celebrated comedian and showman, was also a native of Philadelphia, April 9, 1804. He was the first to employ P. T. Barnum, who later became his rival. Samuel S. Sanford, the popular minstrel, was a son of Lindsay's sister, and first served as an actor with his uncle's circus.

Another pioneer under "the big white top" was Adam Forepaugh, a native of Philadelphia, whose circus, in 1863, was the largest in America, eight years before Barnum opened his circus. Mr. Forepaugh also sent out the Dan Rice Circus in 1864. In 1869 he raised two round-top pavilions for the first time in circus history. One was for the menagerie and the other for performances. The rivalry between Forepaugh and Barnum, begun in 1874, became a bitter feud by 1882, and continued so until 1887, when Adam Forepaugh, too old for active business, turned his circus interests to a son.

CHAPTER XVI.

THE PRESS.

The history of the newspaper press in Pennsylvania had its origin when the "American Weekly Mercury" was first published by Andrew Bradford, at Philadelphia, December 22, 1719. This was the third journal published in the American Colonies. The first permanent newspaper was the "Boston News-Letter," issued in April, 1704; the second was the "Boston Gazette," issued December 21, 1719, just one day before Bradford published the first number of the "Mercury." The second newspaper established in the Province was the "Universal Instructor in All Arts and Science; and Pennsylvania Gazette," December 24, 1728, which continued for many years, and a half century after its establishment became the oldest newspaper in the United States.

During the more than two centuries that bridge the interval of time between the birth of the press in America and this present day the journalists of Pennsylvania have intelligently engaged in the interpretation and solution of all the leading



A Pennsylvania Paper Denounces the Stamp Act

questions that have affected the colonial, national or local welfare. In the building of the Nation and the Commonwealth in its every detail, public enterprises, the culture of art, literature, religion, and science, in strangling mischievous tendencies, and in nurturing popular morals, there has been no movement in which the newspapers have not been vigorous, aggressive, fearless, and determined factors. Today the journals of Pennsylvania are surpassed nowhere in any of the qualities that

conduce to the influence, the dignity, and the value of the printed word. It would be impracticable to attempt to catalogue all the numerous instances in which Pennsylvania enterprise has inaugurated a new departure in the realm of journalism.

Benjamin Franklin purchased the second newspaper from the owner, Samuel Keimer, soon after the first issue, and changed its name to the "Pennsylvania Gazette," when it gained an enviable reputation and wide circulation. Franklin continued to publish the paper until after the close of the French and Indian War.

During the period from the close of the Revolutionary War to the end of the century, there were several prominent newspapers, among which were: "Freeman's Journal, or The North American Intelligencer," the "Independent Gazetteer," the "Pennsylvania Mercury and Universal Advertiser," the "Pennsylvania Evening Herald," the "Philadelphia Gazette," the "Gazette of the United States," and the "Aurora," all of Philadelphia. The first newspaper west of the Allegheny Mountains, the "Pittsburgh Gazette," was established July 29, 1786.

It was during this period that many journalists of individuality and power, some of whom gained more than national reputation, made their appearance in Pennsylvania. They greatly assisted in the broadening newspaper arena. Among them should be mentioned Robert Aiken, William Goddard, Francis Bailey, Hugh Henry Brackenridge, Eleazer Oswald, Daniel Humphreys, Matthew Carey, Andrew Brown, Andrew Brown, Jr., Thomas Paine, Samuel Relf, John Fenno, John Ward Fenno, Benjamin Franklin Bache, William Duane, Philip Freneau, James Carey, and William Cobbett.

After the opening of the nineteenth century most of the journals were strong party organs, deeply interested in political discussion and action, and each taking a definite stand in party policy. Within this era, and continuing up to the close of the Civil War, in 1865, three great wars were fought, and during that time there occurred those radical controversies over Anti-Masonry, Native-American movement, nullification, anti-slavery, emancipation, secession, reconstruction, greenbackism, and kindred questions. Many newspapers were actually founded with the especial object of defending some of these issues. In 1810 there were seventy-one weekly newspapers in Pennsylvania.

The modern press has improved and made a great advancement in tone and morale. In the period of political animosity extreme violence and virulence was the order of the day. Frequently the editor was an acrimonious and vituperative writer, strong in invective and abuse, and was wont to attribute the basest motives to his opponents. They quarreled, fought duels, and more frequently were sued for libel. Among the influential journals established during this exciting period, the following may be mentioned as representative: "Democratic Press," started by John Binns, March 27, 1807, with the motto, "Strike, but Hear." It was the first newspaper in the Union to be called "Democratic," and it was some years before any other paper adopted that name; the paper was absorbed by the "Philadelphia Inquirer" in 1829; the "American Sentinel," "Philadelphia Register," the "Sunday

Dispatch," now the oldest Sunday paper, founded in 1848; the "Sunday Transcript," the "Sunday Times," the "Evening Star," the "Franklin Gazette," the "National Gazette," the "Daily Chronicle," the "Pennsylvanian," of which James Gordon Bennett was an early editor; the "Public Ledger," the "Spirit of the Times," the "North American," the "Evening Bulletin," and the "Germantown Telegraph" were all important.

The number of newspapers that died soon after their establishment is, indeed, very large. In its issue of September 26, 1837, the "Public Ledger" thus refers to a number of its rivals which had recently collapsed: "The 'Times' had no time to breathe, for it died as soon as born; the 'Morning Post' that posted to its grave as rapidly as if it were an express post; the 'Transcript,' that did nothing but transcribe, for it could not reach originality, and transcribed nothing worth reading; the 'Eagle,' that seemed more like a screech owl, and never got fledged enough to fly; the 'Commercial Pilot,' that actually ran upon the rocks and got shipwrecked in putting to sea; the 'Plain Truth,' that told nothing but lies." The only newspaper established in the eighteenth century that survived through the following one was the "North American," which was in fact a consolidation of two earlier journals, in 1839. The "Inquirer" is the oldest newspaper in Philadelphia, established June 1, 1829.

To Benjamin Franklin is due the honor of having issued the first newspaper in the German language in the Western World. It was titled the "Philadelphische Zeitung" ("Philadelphia Gazette"), and was first published June 10, 1732. The second German paper was published August 20, 1739, by Christopher Sower, who cast the type and made the ink in his Germantown shop. This paper was published until after the Revolutionary War.

The first newspaper published in the French language was established in Philadelphia in 1784, called "Le Courier de L'Amerique." The "Erin," a weekly newspaper devoted to Irish news, was established in 1822. The "Jewish Record" was established April 16, 1875.

The first religious weekly newspaper to be established in the Western Hemisphere was a Pennsylvania enterprise. It was titled the "Religious Remembrancer," and first issued in Philadelphia on September 4, 1813.

The first daily newspaper in America was the "Pennsylvania Packet or General Advertiser," established in 1771, and made a daily in 1784. The first penny paper was also a Pennsylvania venture. Philadelphia led the way in the sphere of cheap journalism, when "The Cent" was first published in 1830. The first commercial and trade journals were established in Philadelphia, when the pioneer was the "Price Current," founded by John Macpherson, in June, 1783, twelve years prior to the second such publication. The "Price Current" was issued every fifteen days, in which were "Contained the prices of merchandise, duties on importations and exportations, regulated by John Macpherson, broker, with the assistance of twenty eminent merchants, factors, and others; likewise, the course of exchange, the

premiums of insurance to and from the most considerable places of trade, etc." After the close of the Civil War the number of journals specially devoted to the interests of certain trades or professions was greatly multiplied, until nearly every branch of trade and business was represented.

The first magazine in America made its bow to the public in Philadelphia, when "The American Magazine, or a Monthly View of the Political State of the British Colonies," made its initial appearance February 13, 1741. Franklin's press brought out the second magazine only three days later. Philadelphia was long the home of three widely circulated magazines—"Grahams," "Peterson's," and "Godey's Lady's Book." The last named reached a circulation of 150,000 in the heyday of its prosperity. The "Saturday Evening Post" is regarded as a magazine, and is today the oldest and largest in the world. "The Portfolio," started by "Oliver Oldschool" in 1801, enjoyed immense popularity and financial success. Its editor was Joseph Dennie, until his death in 1812, when it was continued by Nicholas Biddle. Longfellow, Bryant, Cooper, Dana, Lowell, Poe, and Misses Sigourney, Osgood, and Stephens were contributors to "Graham's Magazine." Many of these and Thomas Buchanan Read, George H. Boker and others wrote for "Sartain's Magazine." The popular "Lippincott's Magazine" made its initial appearance in 1868.

"Hazard's Register," established in 1828, was devoted to the preservation of every kind of useful information respecting the Commonwealth. The "Pennsylvania Magazine of History and Biography" was first published by the Historical Society of Pennsylvania in 1877, and remains one of the most valuable publications in the country.

Pennsylvania newspapers which have enjoyed a continuous publication for a century or longer: "Saturday Evening Post," Philadelphia, 1728, more than 200 years; "Gazette Times," Pittsburgh, 1786, nearly 150 years; "Franklin's Repository," Chambersburg, 1790; "Intelligencer," Lancaster, 1794; "Gazette," York, 1795; "Herald," Norristown, 1799; "Westmoreland Democrat," Greensburg, 1799; "Star and Sentinel," Gettysburg, 1800; "Gazette and Bulletin," Williamsport, 1801; "Volunteer Herald," Carlisle, 1802; "Bucks County Intelligencer," Doylestown, 1804; "Gazette," Bedford, 1805; "Tribune," Greensburg, 1807; "Reporter," Washington, 1808; "Argus," Beaver, 1808; "Gazette," Lewistown, 1811; "Western Press," Mercer, 1811; "Inquirer," Bedford, 1812; "Progress," Indiana, 1813; "Democrat-Messenger," Waynesburg, 1813; "Presbyterian Banner," Pittsburgh, 1814; "Spy," Columbia, 1815; "Democrat," Doylestown, 1816; "Miltonian," Milton, 1816; "Complier," Gettysburg, 1818; "Courier and Report," Lebanon, 1819; "Journal," Pottsville, 1822; "Episcopal Recorder," Philadelphia, 1822; "Free Press," Kittanning, 1825; "Commercial List & Price Current," Philadelphia, 1826; "Dispatch," Milford, 1826; "Republican," Clearfield, 1827; "Reformed Church Messenger," Philadelphia, 1827; "Herald," Somerset, 1827; "Journal," Millheim, 1827; "Centre Reporter," Center Hall, 1827; "Independent Republican," Montrose, 1827; "Friend," Philadelphia, 1827; "Examiner," Lancaster,

1828; "Inquirer," Philadelphia, 1829; "Democrat," Allentown, 1830; "Journal," Lewisburg, 1830; "Germantown Telegraph," Philadelphia, 1830; "Telegraph," Harrisburg, 1831; "Lutheran Church Work and Observer," Philadelphia, 1831; "Presbyterian," Philadelphia, 1831; "Pennsylvania Argus," Greensburg, 1832; "Democrat and Sentinel," Lewistown, 1832; "Record," Wilkes-Barre, 1832; "Republican," Waynesburg, 1833. "Christian Advocate," Pittsburgh, 1833; "Republican," Chester, 1833; "Post," Middleburg, 1834; "Volksblatt und Freiheits-Freund," Pittsburgh, 1834. Monthlies: "Allegheny Literary Monthly," Meadville, 1815; "American Journal Medical Sciences," Philadelphia, 1820; "American Journal of Pharmacy," Philadelphia, 1825; "Journal Franklin Institute," Philadelphia, 1826.

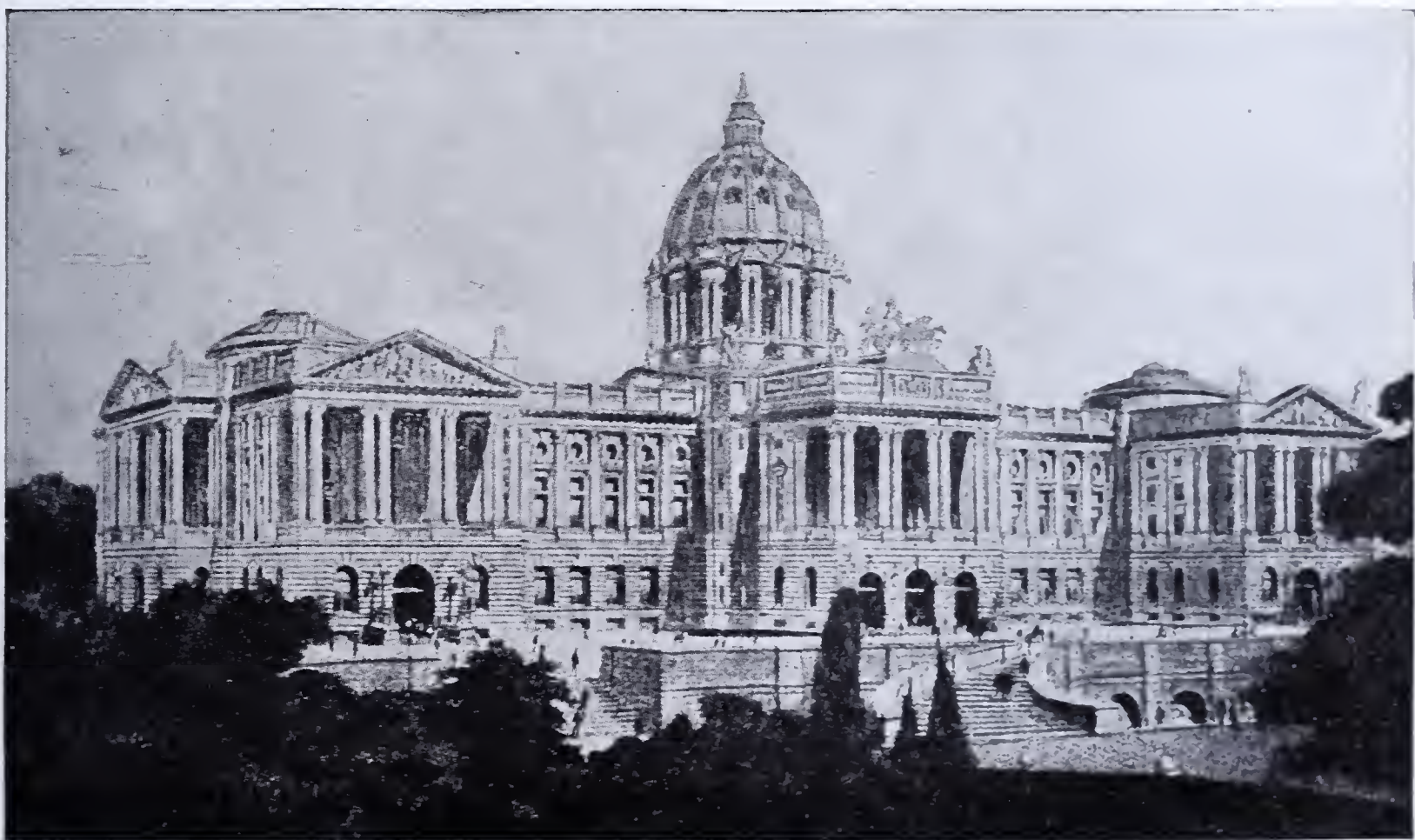
CHAPTER XVII.

STATESMANSHIP.

Eighty native Pennsylvanians have served as Governor in thirty different States in the Union and seven others have served as governors of different possessions of the United States, as follows:

Arizona: Frederick A. Tritle, of Chambersburg; C. Meyer Zulick, of Easton; Lewis Wolfley, of Philadelphia; Myron Hawley McCord, of Ceres, and General William W. H. Davis, of Doylestown.

Arkansas: Isaac Murphy, of Pittsburgh, the seventh Governor, had previously served in the State Senate, and on the vote on secession was the only one to vote "no"; and Powell Clayton, of Delaware County, who was general in the Civil War, United States Senator, and Minister to Mexico.



New Capitol

California: John Bigler, of Perry County, at the same time his brother, William, served as Governor of Pennsylvania. General John W. Geary acted as military governor for a time.

Colorado: William Gilpin, of Philadelphia; Alexander Cummings, of Williamsport, and Albert Washington McIntyre, of Pittsburgh.

Delaware: Thomas McKean and John Dickinson served prior to and during the Revolution; Gunning Bedford, of Philadelphia, 1796, and Caleb P. Bennett, of Chester County, after it became a State.

Idaho: Theodore F. Singiser, of Cumberland County, and William M. Bunn, of Philadelphia, were territorial governors; and George Laird Shoup, of Kittanning; John Tracy Morrison, of Jefferson County, and James Henry Brady, of Indiana County, were the first, sixth and eighth governors.

Illinois: John Reynolds, of Montgomery County, and Thomas Ford, of Fayette County, were the fourth and seventh governors.

Indiana: General John Gibson, of Lancaster, was twice Territorial Governor and sixteen years the Secretary of the Territory; William Hendricks, of Westmoreland County; David Wallace, of Mifflin County; Joseph Albert Wright, of Washington County; Conrad Baker, of Franklin County, and Isaac Pusey Gray, of Chester County, served a total of nine terms as Governor.

Iowa: James Clark, of Westmoreland County; Cyrus Clay Carpenter, of Susquehanna, and Joshua C. Newbold, of Fayette County, served as territorial governors; and Albert B. Cummins, of Carmichaels, was three times Governor, 1901-06, and United States Senator.

Kansas: Andrew Horatio Reeder, of Easton; John White Geary, of Westmoreland County; Robert James Walker, of Northumberland, and Samuel Medary, of Montgomery County, served as the first, third, fourth, and sixth territorial governors, and the latter also as Governor of Minnesota; and Thomas Andrew Osborne, of Crawford County; John Alexander Martin, of Crawford County, and Henry J. Allen, of Warren County, as Governor of the State. The latter was also United States Senator, to succeed Vice-President Curtis.

Kentucky: Joseph Desha, of Monroe County, served three terms; and William Goebel, of Sullivan County, was murdered in the Capitol while serving as the thirty-third Governor.

Massachusetts: Samuel W. McCall, of Bedford County, was three times Governor, and William S. Youngman, of Williamsport, was serving a Lieutenant Governor when defeated for Governor in the Democratic landslide of 1932.

Michigan: George Bryan Porter, of Montgomery County; Robert McClelland, of Franklin County, and John T. Rich, of Crawford County, served four terms.

Minnesota: Alexander Ramsey, of Harrisburg, and Samuel Medary, of Montgomery County, were first and last territorial governors; Stephen Miller, of Perry County; Ignatius Donnelly, of Philadelphia, and Andrew Ryan McGill, of Crawford County, served a total of six terms as Governor of the State.

Mississippi: David Holmes, of York, was fourth Territorial, and first and fifth State Governor, and then served five terms in the United States Senate.

Missouri: Alexander McNair, of Harrisburg, was the first State Governor.

Montana: James Mitchell Ashley, of Pittsburgh, was third Territorial Governor.

Nevada: John Henry Kinkead, of Somerset, was third Governor, and also Governor of Alaska.

New Jersey: William Franklin, son of Benjamin Franklin, was Colonial Governor, 1763-76; George B. McClellan; Leon Abbott; Edwin C. Stokes, and Walter Evans Edge, all of Philadelphia, served as Governor of the State. The latter was also United States Senator.

New Mexico: General William W. H. Davis, of Doylestown, was Territorial Governor.

North Dakota: Andrew J. Faulk, of Pike County, was Territorial Governor, and Louis Benjamin Hanna, of Beaver County, the World War Governor.

Ohio: General Arthur St. Clair, of Greensburg, was the first Territorial Governor, 1787-1800, and was succeeded by Winthrop Sargeant, of Philadelphia; Jeremiah Morrow, of Adams County; Joseph Vance, of Washington County, and Mordecai Bartley, of Fayette County, served a total of four terms as Governor of the State.

Oregon: John Wesley Davis, of New Holland, was Territorial Governor, as was George Law Curry, of Philadelphia.

Rhode Island: John Brown Francis, of Philadelphia, was the eleventh Governor, 1833-38.

South Carolina: Robert Kingston Scott, of Armstrong County, was the forty-fifth Governor.

Tennessee: Archibald Roane, of Dauphin County; Joseph McMinn, of Chester County, and William Carroll, of Pittsburgh, served in all fourteen terms; McMinn three and Carroll ten. Henry Clay Evans, of Juniata County, was elected Governor in 1894, and in a contest his Democratic opponent was seated.

Virginia: Gilbert Carlton Walker, of Susquehanna County, was Governor 1869-74.

West Virginia: Arthur Ingraham Boreman, of Waynesburg, and William Erskine Stevenson, of Allegheny County, were the first and second governors, 1863-71.

Wisconsin: Edward W. Schofield, of Clearfield County, was the eighteenth Governor, 1897-1901.

Wyoming: Amos Walker Barber, of Bucks County, was the second Governor.

Alaska: James Sheakley, of Mercer County, and John Henry Kinkead, of Somerset.

Cuba: General John R. Brooke, of Pottsville, served as military governor following the Spanish-American War.

Virgin Islands: Rear Admiral Joseph Wallace Oman, of Bloomsburg, and Paul Pearson, of Swarthmore, the present incumbent, served as Governor.

Philippine Islands: Major General Samuel Baldwin Marks Young, of Pittsburgh, was military governor, 1899-1901.

Santo Domingo: Admiral Samuel Robinson, of Juniata County, was military governor, 1921-22.

Pennsylvania United States Senators—The Pennsylvanians who have served in the United States Senate from the several States are as follows:

Arkansas: Alexander McDonald, of Lock Haven, 1868-71; Powell Clayton, of Bethel.

California: Thomas Robert Bard, of Chambersburg, 1900-05.

Colorado: George Miles Chilcott, of Huntingdon, 1882-83; Simon Guggenheim, of Philadelphia, 1907-13; and Lawrence Cole Phipps, of Washington County, who served from 1919 to 1931.

Delaware: James Asheton Bayard, of Philadelphia.

Idaho: George Baird Shoup, of Kittanning, 1891-1901; Weldon Brinton Heyburn, of Delaware County, 1903-12; and James Henry Brady, of Indiana County, 1913-18.

Indiana: William Hendricks, of Westmoreland County, 1824-37; and Joseph Albert Wright, of Washington, 1862-63.

Iowa: Albert Baird Cummins, of Carmichaels.

Kansas: Alexander Caldwell, of Huntingdon, 1871-73; William Alfred Puffer, of Cumberland County, 1891-97; Chester I. Long, of Perry County, 1903-09; and Henry Justin Allen, of Warren County, the present incumbent, since 1929.

Kentucky: Martin Davis Hardin, of Washington County, 1816-17; and John Rowan, of York, 1825-31.

Maine: James Gillespie Blaine, of Washington County, 1876-81.

Maryland: Samuel Smith, of Carlisle, 1803-15 and 1822-33, and he was also mayor of Baltimore. He served in Congress for a period of forty years.

Michigan: John Patton, Jr., of Curwensville, 1894-95; and Julius Cæsar Burrows, of North East, 1895-1911.

Minnesota: Alexander Ramsey, of Harrisburg, 1863-75; and Samuel James Renwick McMillin, of Brownsville, the two serving over a space 1863-87.

Mississippi: David Holmes, of York, and Robert James Walker, of Northumberland, 1835-45.

Missouri: Selden Palmer Spencer, of Erie, 1918, until his death in 1925.

Montana: William Andrews Clark, of Connellsville, 1901-07.

Nebraska: Charles Frederick Manderson, of Philadelphia, 1874-95.

New Jersey: Franklin Davenport, 1798-99; Joseph McIlvane, of Bristol, 1823-26; John Renshaw Thomson, 1852-62; Theodore Fitz Randolph, of Mansfield, 1875-81; and Walter E. Edge, of Philadelphia, 1919-31. Mahlon Dickerson and Philemon Dickerson, both of whom served as Governor and United States Senator, afterwards became prominent residents of Philadelphia.

New York: General John Armstrong, of Carlisle, 1800-02.

Ohio: Jeremiah Morrow, of Berks County, 1813-19; Joseph Kerr, of Chambersburg, 1814-15; and Thomas Morris, of Berks County, 1833-39.

Oregon: General Edward Dickinson Baker, of Philadelphia, 1860-61; Benjamin Franklin Harding, of Wyoming County, 1862-65; James Kerr Kelly, of Cen-

tre County, 1871-77; and John Hipple Mitchell, of Washington County, 1873-79, 1885-97, and 1901 until his death in 1905.

Rhode Island: John Brown Francis, of Philadelphia, 1844-45.

South Carolina: William Campbell Preston, of Philadelphia, 1833-42; and John James Patterson, of Juniata County, 1873-79.

Tennessee: Joseph Anderson, of Philadelphia, 1797-1815; Jenkin Whiteside, of Lancaster, 1809-11; and Robert James Walker, of Northumberland. Senator Anderson was president *pro tempore* in 1805.

West Virginia: Arthur I. Boreman, of Waynesburg, 1869-75.

Pennsylvanians in the Cabinets—Washington appointed Timothy Pickering, of Philadelphia, Postmaster General, August 19, 1791. In his second administration Pickering was reappointed, on August 20, 1795, became Secretary of State, and on December 10, following, Secretary of War; James McHenry served as Secretary of War, 1796-1800; and William Bradford, also of Philadelphia, was Attorney General during the second term of President Washington.

John Adams continued Timothy Pickering as Secretary of State until May 12, 1800.

Thomas Jefferson appointed Albert Gallatin, of Fayette County, Secretary of Treasury, May 14, 1801, and he continued to serve through both terms of President Jefferson.

James Madison continued Gallatin as Secretary of Treasury through both terms; General John Armstrong, of Carlisle, became Secretary of War, February 5, 1813, and William Jones Secretary of Navy, January, 1813. In his second term Madison appointed Alexander J. Dallas, of Philadelphia, Secretary of Treasury, October, 1814, and in March, 1815, he succeeded Armstrong as Secretary of War; Richard Rush, of Philadelphia, became Attorney General February, 1814. Jones served as Secretary of Treasury during Gallatin's absence in Europe at the close of the War of 1812.

James Monroe continued Richard Rush as Secretary of State, until October 30, 1817, when he again became Attorney General.

John Quincy Adams retained Richard Rush, but made him Secretary of the Treasury.

Andrew Jackson appointed Samuel D. Ingham, of Bucks County, as Secretary of the Treasury, and in his second term named William J. Duane, of Philadelphia, to succeed Ingham.

Martin Van Buren named Henry D. Gilpin, of Philadelphia, as Attorney General.

John Tyler named Walter Forward, of Pittsburgh, as Secretary of Treasury, and James M. Porter, of Easton, as Secretary of War, who was succeeded a year later by William Wilkins, of Pittsburgh, who served through both terms.

James K. Polk had as his Vice President George Mifflin Dallas, of Philadelphia. He named James Buchanan, of Lancaster, as Secretary of State, and Robert James Walker, of Tennessee, but a native of Northumberland, as Secretary of the Terasury.

Zachary Taylor named William M. Meredith, of Philadelphia, as Secretary of Treasury.

Millard Fillmore continued Meredith until July 23, 1850; and he named Thomas M. T. McKennan, of Pennsylvania, as Secretary of the Interior.

Franklin Pierce made James Campbell his Postmaster General, and Robert McClelland, of Michigan, but a native of Franklin County, the Secretary of Interior.

James Buchanan, the only Pennsylvanian to be elected President, called to his cabinet Jeremiah Sullivan Black, of Somerset, to be his Attorney General, and three years later made him Secretary of State. Edwin M. Stanton, later of Pittsburgh, succeeded Black as Attorney General.

Abraham Lincoln made Senator Simon Cameron his Secretary of War, and in 1862 he was succeeded by Edwin M. Stanton, who served in this important post through the Civil War. His home was then in Pittsburgh.

Andrew Johnson continued Stanton as Secretary of War until August 12, 1867, and on January 13, following, again called him to assume the same portfolio. J. Hubley Ashton, of Pennsylvania was Acting Attorney General during July, 1866.

Ulysses S. Grant named General Horace Porter, of Huntingdon, his private secretary, and appointed Adolph E. Borie, of Philadelphia, as Secretary of the Navy, and in his second term called James D. Cameron to be Secretary of War.

Rutherford B. Hayes named Alexander Ramsey, of Minnesota, a native of Harrisburg, to be Secretary of War, and for a time he also served as Secretary of the Navy.

James A. Garfield made James G. Blaine, of Maine, a native of Washington County, Secretary of State, and Wayne MacVeagh, of Philadelphia, as Attorney General.

Chester A. Arthur continued MacVeagh in office until November 14, 1881, when he appointed Benjamin H. Brewster, of Philadelphia, to be Attorney General.

Benjamin Harrison named James G. Blaine as Secretary of State, and John Wanamaker, of Philadelphia, to be Postmaster General.

Grover Cleveland made John M. Reynolds, of Bedford, Assistant Secretary of Interior, and for a time he served as Secretary.

William McKinley named Charles Emory Smith, of Philadelphia, Postmaster General, and Joseph McKenna, of California, a native of Philadelphia, as Attorney General. In his second term he named Philander C. Knox, of Pittsburgh, as Attorney General, and retained Smith in his post.

Theodore Roosevelt retained Knox and Smith, but on October 10, 1904, Robert J. Wayne, of Philadelphia, succeeded Smith as Postmaster General.

William H. Taft made Knox Secretary of State and named George Woodward Wickersham, of New York, a native of Pittsburgh, as Attorney General.

Woodrow Wilson named William B. Wilson, of Blossburg, as Secretary of Labor, and he served through both terms. In his second term the President made A. Mitchell Palmer, of Stroudsburg, his Attorney General.

Warren G. Harding appointed Andrew W. Mellon, of Pittsburgh, as Secretary of the Treasury; James J. Davis as Secretary of Labor; and Dr. Hubert Work, of Colorado, a native of Indiana County, Postmaster General, and later as Secretary of the Interior.

Calvin Coolidge retained all three Pennsylvanians in their positions, and in his second term appointed James M. Beck, of Philadelphia, Solicitor General, who also served *ad interim* as Attorney General.

Herbert Hoover retained Secretary Mellon and Secretary Davis. The former resigned in February, 1932, to assume the duties of Ambassador to Great Britain. The President appointed Lawrence Richey, a native of Harrisburg, as his secretary.

Franklin D. Roosevelt has called William H. Woodin, of New York, a native of Berwick, to be Secretary of the Treasury, and Harold L. Ickes, of Illinois, a native of Blair County, to be Secretary of the Interior.

To the above list should be added the name of Benjamin Franklin, who was Deputy Postmaster General of the British North American Colonies, 1753 to 1774.

Many Pennsylvanians have served the government at important foreign posts, and while the list is not complete, the following are here listed:

Great Britain: Benjamin Franklin, as agent of Pennsylvania and later also of Massachusetts, 1757-62 and 1764-75; Albert Gallatin, to negotiate treaty of peace, February, 1814-December 24, 1815, and again as representative to Commercial Convention, in 1816; Richard Rush, as Minister, 1817-25; Albert Gallatin, 1826-1827; Joseph Reed Ingersoll, 1852-53; James Buchanan, 1853-56; George M. Dallas, 1856-61; John Welsh, of Philadelphia, 1878-79; Andrew Mellon, 1932-33. Vance C. McCormick, of Harrisburg, was a member of War Commission to Great Britain and France in 1917. Samuel Sitgreaves, of Easton, was Commissioner to Great Britain, 1798; Henry Clay Evans, of Tennessee, native of Juniata County, Consul General at London, 1902-05.

Joshua Reed Giddings, of Ohio, native of Athens, Consul General to British North American Provinces, at Montreal, 1861 until his death, 1864; Percival S. Heintzleman, of Fayetteville, is Consul General at Winnipeg since 1925.

France: Benjamin Franklin was Diplomatic Commissioner 1776-85, and a commissioner in the treaty of peace; General John Armstrong, of New York, native of Carlisle, 1804-10; Albert Gallatin, 1815-23; James A. Bayard, of Delaware, native of Philadelphia, Commissioner at Treaty of Ghent, 1814; Gouverneur Morris, of Philadelphia, Thomas P. Barton, Levett Harris, and Richard Rush served as Minister; and as Ambassador, General Horace Porter, of Huntingdon, 1897-1905, and Walter E. Edge, of New Jersey, native of Philadelphia, since November, 1929.

John Meredith Read was Consul in France and Algeria, 1869; George Washington Morgan, of Washington County, Consul, 1856-58; George Orr, of Philadelphia, and John Ball Osborne, of Wilkes-Barre, served as Consul General, at Paris and Havre.

Germany: Bayard Taylor, of Delaware County; Charlemagne Tower, of Philadelphia; John G. A. Leishman, and David Jayne Hill, of Lewisburg, served as Ambassador.

Joseph Albert Wright, of Indiana, native of Washington, was Minister to Prussia, 1857-61, and 1865 until his death in 1867.

Austria-Hungary: Henry A. Muhlenberg, 1838-40; John R. Clay; J. Glancey Jones, of Reading, 1858-61; Godlove Stoner Orth, of Lebanon, 1875-82; Henry M. Watts; Charlemagne Tower; and Frederick C. Penfield, of Philadelphia, and Ulysses G. Smith, of Washington, 1919-21. George H. Earle, of Philadelphia, was appointed minister to Austria, in August, 1933.

Switzerland: David Jayne Hill; Samuel Hawkins M. Byers, of Iowa, native of Pulaski, Pennsylvania; and Robert Frazer, of Philadelphia, 1919-27.

Italy: William Potter; Wayne MacVeagh; Lloyd C. Griscom; John A. G. Leishman; Henry P. Fletcher, of Greencastle, 1924-29; Samuel H. M. Byers served as Consul General.

Belgium: Henry P. Fletcher, 1922-24.

Poland: John B. Stetson, of Philadelphia, 1925-30.

Spain: General John Armstrong; A. Lowdon Snowden, of Philadelphia; Cyrus E. Woods, of Greensburg; Alexander P. Moore, of Pittsburgh; and Irvin Laughlin, of Pittsburgh, since 1929.

Roumania: John Wallace Riddle, of Connecticut, native of Philadelphia, 1905-1906; and William Smith Culbertson, of Greensburg, 1925-28.

Bulgaria: Henry W. Shoemaker, of McElhattan, since January, 1930; William Warfield, of Easton, Chargé d'Affaires at Sofia.

Sweden: James Hepburn Campbell, of North Carolina, native of Williamsport, 1864-67.

Denmark: James P. Wickersham; Walter Forward, of Pittsburgh, 1849-51; William Wallace Irwin, of Pittsburgh; Andrew Jackson Ogle, of Somerset; and Ulysses Grant Smith, of Washington, Chargé d'Affaires at Copenhagen, 1917-19.

Portugal: George W. Morgan, of Washington County, 1858-61; and Cyrus E. Woods, of Greensburg.

Albania: Ulysses Grant Smith, 1922-26.

Two Sicilies: Joseph Ripley Chandler, of Philadelphia, 1858-60.

Greece: John Meredith Read, of Philadelphia, 1873-79; and William Woodside Rockhill, of Philadelphia, to Greece, Roumania, and Servia, 1897-99.

Russia: Levett Harris; Albert Gallatin; James Buchanan, 1832-34; William Wilkins; Henry A. Muhlenberg; John R. Clay; George M. Dallas; W. W.

Chew; Simon Cameron; Andrew G. Curtin; John Martin Crawford, of Herrick; George W. Wurtz; Charles Emory Smith; Charlemagne Tower; George H. Boker; and John Wallace Riddle, 1906-09.

Turkey: Edward Joy Morris, 1861-70; Edward J. Biddle, George H. Boker; and Wayne MacVeagh.

Naples: Edward Joy Morris, 1850-53.

Algeria: John Meredith Read, 1869.

Egypt: John Alexander Anderson, of Kansas, native of Washington County, 1881 until his death in 1892; Jasper Yeates Brinton, of Philadelphia; has served as justice of the mixed courts of Egypt since 1921.

China: John Renshaw Thomson, of Philadelphia, 1823-25; John Wesley Davis, of Indiana, native of New Holland, 1848-51; William Bradford Reed, of Philadelphia, 1857-60; and William Woodside Rockhill, Commissioner, 1900-01. Percival S. Heintzleman, of Fayetteville, was Consul General at Mukden, 1914-16; Canton, 1916-18; Tientsin, 1918-19; and Hankow, 1919-25; and Myrl Scott Mayers, of Mechanicsburg, has served as Consul General at Mukden since 1930.

Japan: John Armour Bingham, 1873-85; George W. Guthrie, of Pittsburgh; Roland S. Morris, of Philadelphia; Cyrus E. Woods, of Greensburg; and Charles MacVeagh, of West Chester.

India: Robert Frazer, of Philadelphia, Consul General at Calcutta since 1927.

Mexico: Wayne MacVeagh; Powell Clayton, 1897-99, and Ambassador, 1899-1905; and Henry P. Fletcher, of Greencastle, 1916-20.

Guatemala: Elijah Hise, of Kentucky, native of Allegheny County, 1848-49.

Honduras: Willard Spencer, of Philadelphia, 1916-17; and Franklin E. Morales, of Philadelphia, 1921-25.

West Indies: William Bingham, of Philadelphia, at St. Pierre.

Hayti: George Washington Williams, of Bedford, 1885-86.

Brazil: Robert Adams, Jr., of Philadelphia, 1889-90.

Columbia: Benjamin Bidlack, of Wilkes-Barre, 1845 until his death in 1849.

Ecuador: Charles R. Buckalew, of Bloomsburg, 1858-61.

Peru: Alexander P. Moore, of Pittsburgh.

Bolivia: Charlemagne Tower; David E. Kauffman, of Towanda; and Solomon Newton Pettis, of Meadville, 1878-79.

Paraguay: William Williams, of Indiana, native of Carlisle, 1882-85.

Uruguay: William Williams, also for Paraguay; and Ulysses S. Grant Smith, of Washington, Pennsylvania, 1925-29.

Chile: Henry P. Fletcher, 1909-16; and William S. Culbertson, of Greensburg, since 1928.

Argentine Republic: John Wallace Riddle, 1921-25; and George S. Messersmith, of Fleetwood, since 1928. Craig Wharton Wadsworth, of Philadelphia, has been Chargé d'Affaires at Buenos Aires, 1916, and Montvideo, 1917-18.

Pennsylvanians in the Federal Congress—Prior to the adoption of the Federal Constitution Thomas Mifflin served as President of Congress from November 3, 1783, to November 30, 1784, and General Arthur St. Clair served from February 2, 1787, to January 22, 1788. At this period the position was the highest in the infant Republic. Charles Thomson served as secretary to the Continental Congress from its organization until the adoption of the Constitution.

Officers of the United States Senate—William Bingham served as President *pro tempore* from February 16, 1797, to July 6, 1797; James Ross served from March 1, 1799, to December 2, 1799; Andrew Gregg, June 26, 1809, to February 28, 1810; Joseph Anderson, of Tennessee, a native of Philadelphia, served in 1805; Samuel Smith, of Maryland, native of Carlisle, served 1805-08; Charles F. Manderson, of Nebraska, native of Philadelphia, served 1891-93; Albert B. Cummins, of Iowa, native of Carmichaels, served from May 19, 1919, to March 6, 1925. Walter Lowrie was secretary of the Senate, 1825 to 1836, and John W. Forney from 1861 to 1868.

Officers of the House of Representatives—Frederick A. C. Muhlenberg was Speaker of the First Congress, and of the Third; Galusha A. Grow, of Thirty-seventh; Samuel J. Randall, of the Forty-fourth, Forty-fifth, and Forty-sixth. James G. Blaine, native of Washington County, served as Speaker of the Forty-first, Forty-second, and Forty-third; he was succeeded by Michael Crawford Kerr, of Indiana, a native of Titusville, who served the first session of the Forty-fourth Congress. John Wesley Davis, of Indiana, native of New Holland, served as Speaker of the Twenty-ninth Congress. Elias Boudinot, of New Jersey, who was President of the Continental Congress, 1782-83, and who signed the treaty of peace with England, was a native of Philadelphia.

Jonathan W. Condry was Clerk of the House in the Fifth and Sixth, when he was succeeded by John H. Oswald, who served through the remainder of the Sixth Congress; Matthew St. Clair Clarke served from December 3, 1822, to December 2, 1833, when he was succeeded by Walter S. Franklin, who served until his death, September 20, 1838, when Clarke was again elected and served until December 6, 1843; John W. Forney served from 1851 to 1856; 1860-61, when he was elected clerk of the Senate; Edward McPherson, of Gettysburg, served from 1863 until 1875, again 1881 to 1883, and 1889 to 1891; James Kerr, of Clearfield, from 1891 to 1895; and Alexander McDowell, of Chambersburg, from 1895 until April 4, 1911.

Listed among those who have held important positions in the Federal Government may be mentioned:

State Department: Henry P. Fletcher, of Greencastle, as Undersecretary, 1921-22.

Attorney General: James M. Beck, of Philadelphia, Solicitor General, 1921-25; and George Augustus Jenks, of Brookville, 1886-89.

Executive: Adam John Glossbrenner, of York, Private Secretary to President Buchanan; Dr. Joel T. Boone, of St. Clair, physician to President Hoover.

War: Francis I. Jones, of Blossburg, Director General U. S. Employment Service.

Treasury: Samuel Meredith, of Philadelphia, first Treasurer under the Constitution, 1789-1801; William Clark, of Dauphin County, 1828-29; John Sloane, of Ohio, native of York, 1850-53; George O. Barnes, of Sugar Run, Assistant Treasurer since 1929; Joseph Anderson, of Tennessee, native of Philadelphia, first Comptroller, 1815-36; Walter Forward, of Pittsburgh, 1841-42; Charles H. Mansur, of Missouri, native of Philadelphia, 1893-94; William Smith, of Maryland, native of Lancaster, first Auditor, 1791; Robert James Mawhinney, of Philadelphia, Solicitor since 1926; John Allison, of Beaver County, Register, 1869 until his death in 1878; Gleni William Scofield, of Warren, 1878-81; Edward E. Jones, of Harford, since 1929.

Bureau Printing and Engraving: Edward McPherson, of Gettysburg, Director, 1877-78; Alvin William Hall, of Harleigh, since 1924.

United States Mint: David Rittenhouse, first Director; Elias Boudinot, of Philadelphia, 1795-1805; Samuel Moore, of Bucks County, 1824-35; William Findlay, 1827-41; George Nicholas Eckbert, of Reading, 1851-53; James Pollock, of Milton, 1861-66, and 1867-93. Benjamin Rush, of Philadelphia, Treasurer, 1799 until his death in 1813; Daniel Sturgeon, of Adams County, 1853-58.

Customs: Frank Xavier A. Elbe, of Milnesville, Commissioner since 1929; William J. Graham, of New Castle, President Judge U. S. Court of Customs and Patent Appeal, since 1924.

Tariff Commission: William Smith Culbertson, of Greensburg, 1917-25.

Bureau of Pensions: Henry Clay Evans, of Tennessee, native of Juniata County, Commissioner, 1897-1902; Winfield Scott, of Greene County, 1925-29.

Patents: Thomas Clarke Theaker, of Ohio, native of York, Commissioner, 1865-68.

Indian Affairs: Thomas Hartley Crawford, of Chambersburg, Commissioner, 1838-45; Hiram Price, of Iowa, native of Washington, 1881-85.

Schools: James Sheakley, of Mercer County, Commissioner of Schools in Alaska, 1887-92; Martin G. Brumbaugh, of Huntingdon, Commissioner of Schools in Porto Rico after Spanish-American War.

United States Supreme Court: James Wilson, of Carlisle, 1789-98; Henry Baldwin, 1830-44; Robert Cooper Grier, 1846-70; William Strong, 1870-8—; George Shiras, Jr., 1892-1902; Joseph McKenna, of California, native of Philadelphia, 1898-1925.

Court of Claims: Joseph Casey, 1863-70.

Interstate Commerce Commission: Frank McManamy, of Fallen Timber, member since 1923, chairman since 1930.

Pennsylvania has furnished numerous members of the National Congress for the several States, and, not listing those of the present Congress, the number is as follows: Arkansas, one; California, five; Colorado, three; Delaware, seven; Florida, two; Georgia, two; Idaho, three; Illinois, fifteen; Indiana, fifteen; Iowa, seventeen; Kansas, six; Kentucky, nine; Louisiana, four; Maine, one; Maryland, eleven; Massachusetts, four; Michigan, five; Minnesota, five; Mississippi, two; Missouri, eleven; Montana, one; Nebraska, four; New Hampshire, one; New Jersey, twenty-three; New Mexico, two; New York, twenty-two; North Carolina, four; North Dakota, one; Ohio, fifty-seven; Oklahoma, two; Oregon, one; South Carolina, four; Tennessee, four; Texas, two; Utah, two; Virginia, eight; Washington, five; West Virginia, three; Wisconsin, three; Wyoming, one. A grand total of 278 from forty of the States other than Pennsylvania.

INDEX

PHYSICAL, ECONOMIC AND SOCIAL VOLUME

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